

Service Manual

75SD1010 / 1B / 2B

75SD1020 / 1A / 2A

Stereo cassette deck

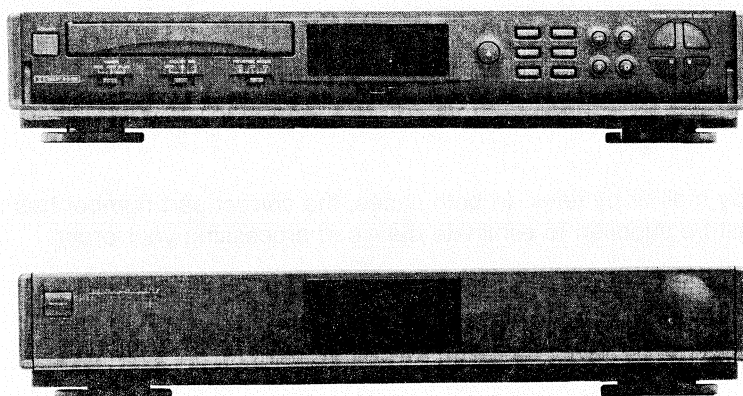


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marantz®

model SD1010 / SD1020

First issue : 1993 / 8

4822 725 51034

PCS 71 172

MARANTZ DESIGN AND SERVICE

Using superior design and selected high grade components, MARANTZ company has created the ultimate in stereo sound. Only **original MARANTZ parts** can insure that your MARANTZ product will continue to perform to the specifications for which it is famous.

Parts for your MARANTZ equipment are generally available at our National Marantz Subsidiary or Agent.

MARANTZ EUROPE B.V.
P.O. Box 80002
Building SFF 2
5600 JB Eindhoven
The Netherlands
Phone : +31-40-732241
Fax : +31-40-735578

ORDERING PARTS

Parts can be ordered either by mail or by telex. In both cases, the correct part number has to be specified. The following information must be supplied to eliminate delays in processing your order:

1. Complete address
2. Complete part numbers and quantities required
3. Description of parts
4. Model number for which the part is required
5. Way of shipment
6. Signature: any order form or telex must be signed, otherwise such part order will be considered as null and void.

ADDRESSES

AUSTRALIA
MARANTZ AUSTRALIA
Figtree Drive
Australia Centre
Homebush, NSW 2140
AUSTRALIA

FINLAND
MARANTZ
Kuortanegatan 1
00520
Helsingfors 52
Finland

ITALY
MARANTZ ITALIANA SPA
Piazza IV Novembre 3
20124 Milano
Italy

NORWAY
MARANTZ
Postboks 7034
Assiden
3007 Drammen
Norway

SPAIN
MARANTZ SPAIN
Martinez Villergas 2
Apartado 2065
Madrid 28027
Spain

AUSTRIA
MARANTZ
Hietzinger Kai 137a
1130 Wien
Austria

FRANCE
MARANTZ FRANCE
4 Rue Bernard Palissy
92600 Asnières
France

JAPAN
MARANTZ JAPAN INC.
35-1, 7-chome, Sagamiono
Sagamihara-shi, Kanagawa
Japan

PORTUGAL
COREL
Av. da Liberdade
211-2 Esq.
1200 Lisboa
Portugal

SWEDEN
MARANTZ
Box 1324
17125 Solna
Sweden

BELGIUM
MARANTZ EUROPE B.V.
Div. Benelux
P.O.Box 80002
Building SFF 2
5600 JB Eindhoven
The Netherlands

GERMANY
MARANTZ GERMANY GmbH
Kleine Heide 12
Postfach 4802
Halle-Westfalen
Germany

KUWAIT
AL ALAMIAH ELECTRONICS
P.O.Box 8196
Salmiah
22052 Kuwait

SAUDI ARABIA
AL ALAMIAH ELECTRONICS
P.O.Box 5954
University Street
Riyadh 11432
Saudi Arabia

SWITZERLAND
MARANTZ SWITZERLAND
Postfach
8010 Zürich-Müllingen
Switzerland

CHILE
MARANTZ DIVISION OF
PHILIPS S.A.
Av.Santa Maria 0760
Casilla 2687
Santiago
Chile

GREAT BRITAIN
MARANTZ HiFi UK Ltd.
Kingsbridge House
Padbury Oaks
575-583 Bath Road
Longford Middlesex UB7 0EH,
U.K.

NETHERLANDS
MARANTZ EUROPE B.V.
Div. Benelux
P.O.Box 80002
Building SFF 2
5600 JB Eindhoven
The Netherlands

SOUTH AFRICA
MARANTZ S.A.
10 Bond Street
Randburg 2194
P.O. Box 7703
Johannesburg 2000
South Africa

TRADING
MARANTZ TRADING
P.O.Box 20008
Building SFF 2
5600 JB Eindhoven
The Netherlands

DENMARK
MARANTZ
Horsvinget 5
2630 Tastrup
Denmark

GREECE
ADAMCO ELECTR. SA
P.O.Box 21025
Hippocratus Str. 188
Athens 11471
Greece

All of the above locations are fully equipped to take care of your total service needs or can advise you. Because various countries have differing configuration requirements, it is necessary that you contact the service facility in your particular country. In the event that there is no service location listed for your country, please contact the nearest facility for the necessary assistance.

In case of difficulties, do not hesitate to contact the Technical Department at above mentioned address.

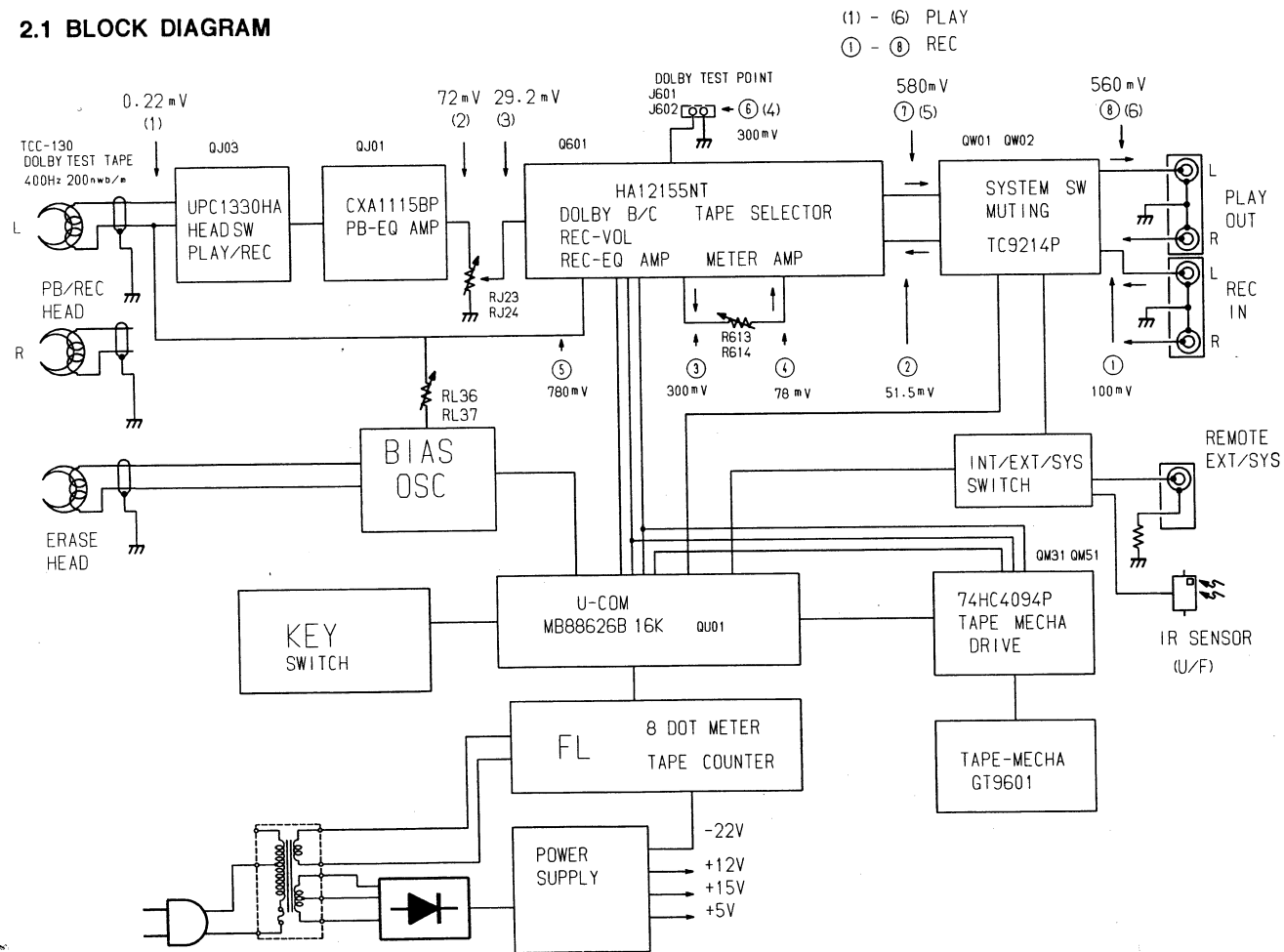
1. TECHNICAL SPECIFICATIONS (DIN)

Motor(s) and type	1 DC
Number of heads	2
Frequency range (3 dB limits ~ no dolby)	30 Hz~19 kHz
Type IV (metal) tape	30 Hz~18 kHz
Type II (CrO ₂) tape	30 Hz~17 kHz
Type I (Fe/Normal) tape	58/67/72 dB
Signal to noise ratio (CrO ₂ tape at 1 kHz) (no Dolby NR/Dolby B and C NR)	0.1%
Wow and flutter	600 mV/1.5 kOhm
Output level/impedance	
Dimensions	
Width	420 mm
Height	68 mm
Depth	300 mm
Net weight	4.5 kg (SD1010)
	4.6 kg (SD1020)
Power supply	
/2 version	230 V AC 50/60 Hz
/5, /7 versions	240 V AC 50/60 Hz
/1 version (2 voltage)	115 V/230 V AC 50/60 Hz

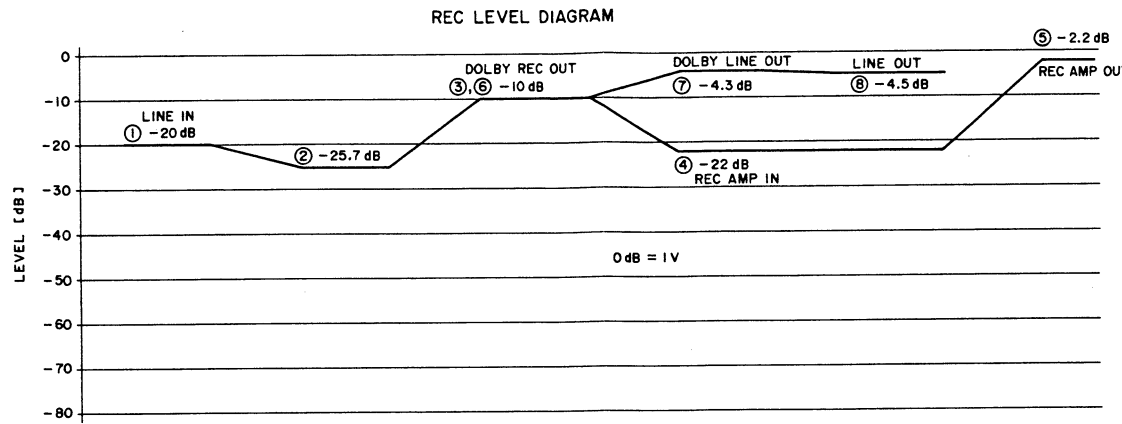
Specifications subject to change without prior notice.

2. BLOCK DIAGRAM AND LEVEL DIAGRAM

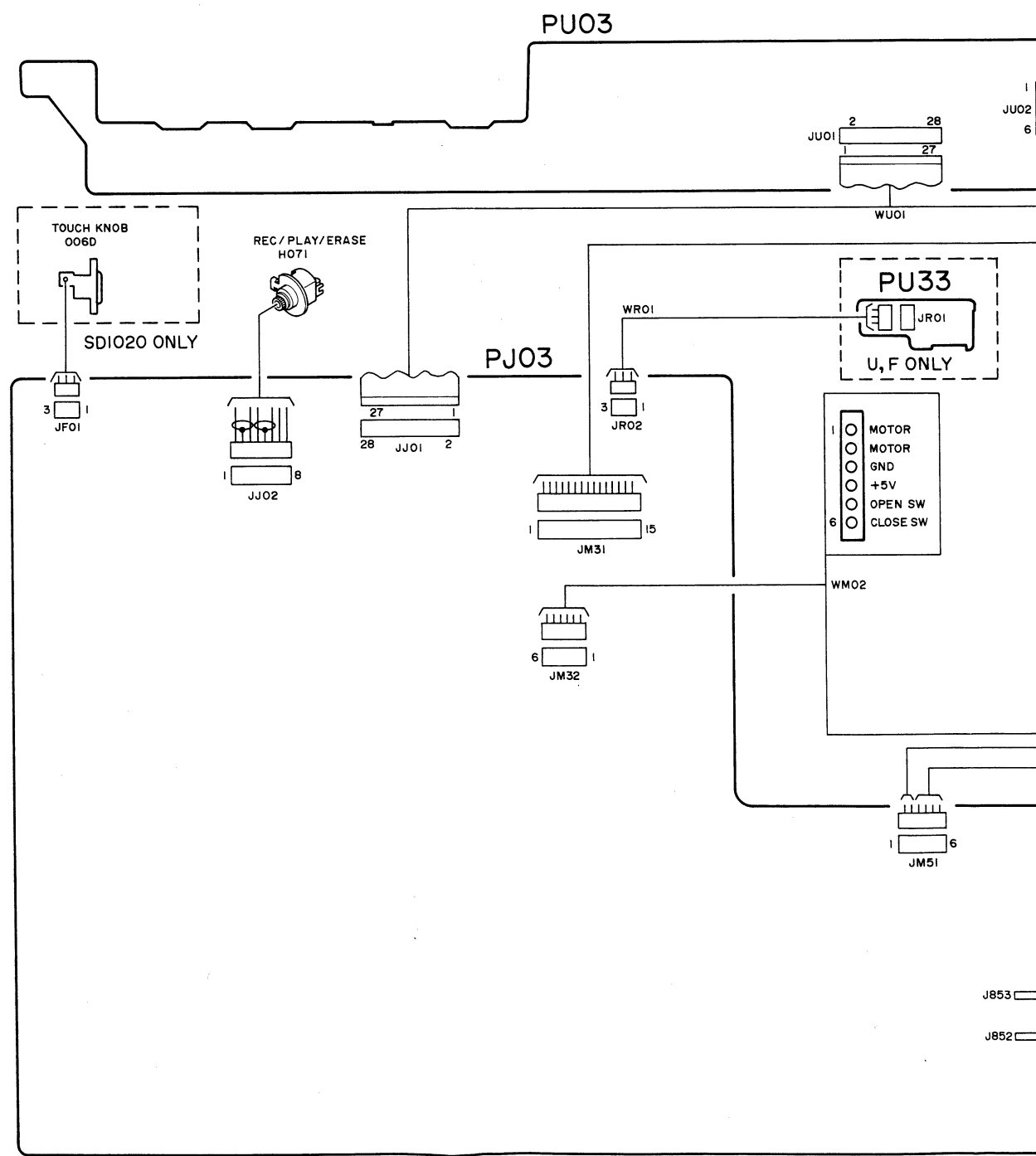
2.1 BLOCK DIAGRAM



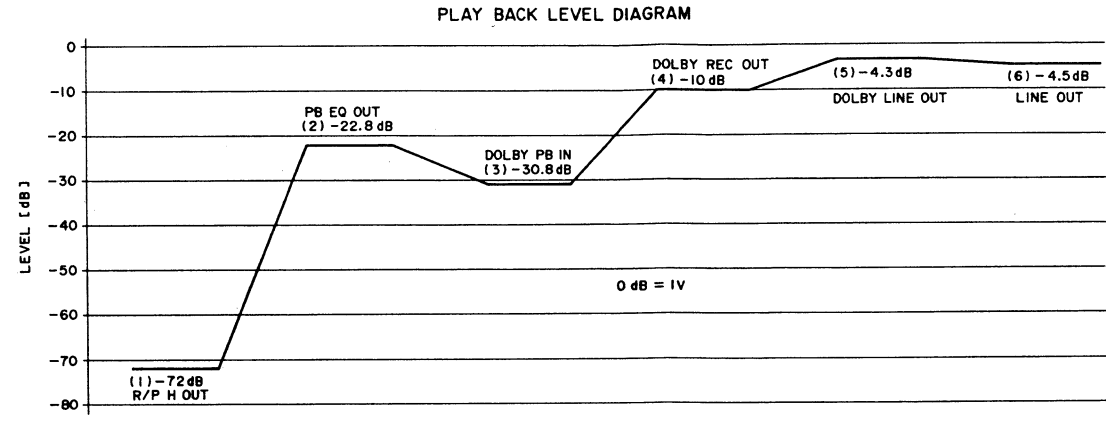
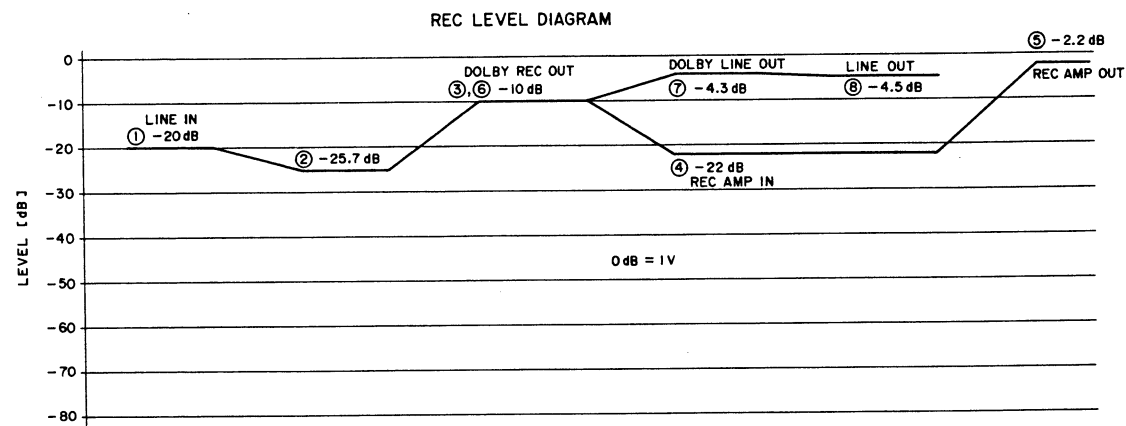
2.2 LEVEL DIAGRAM



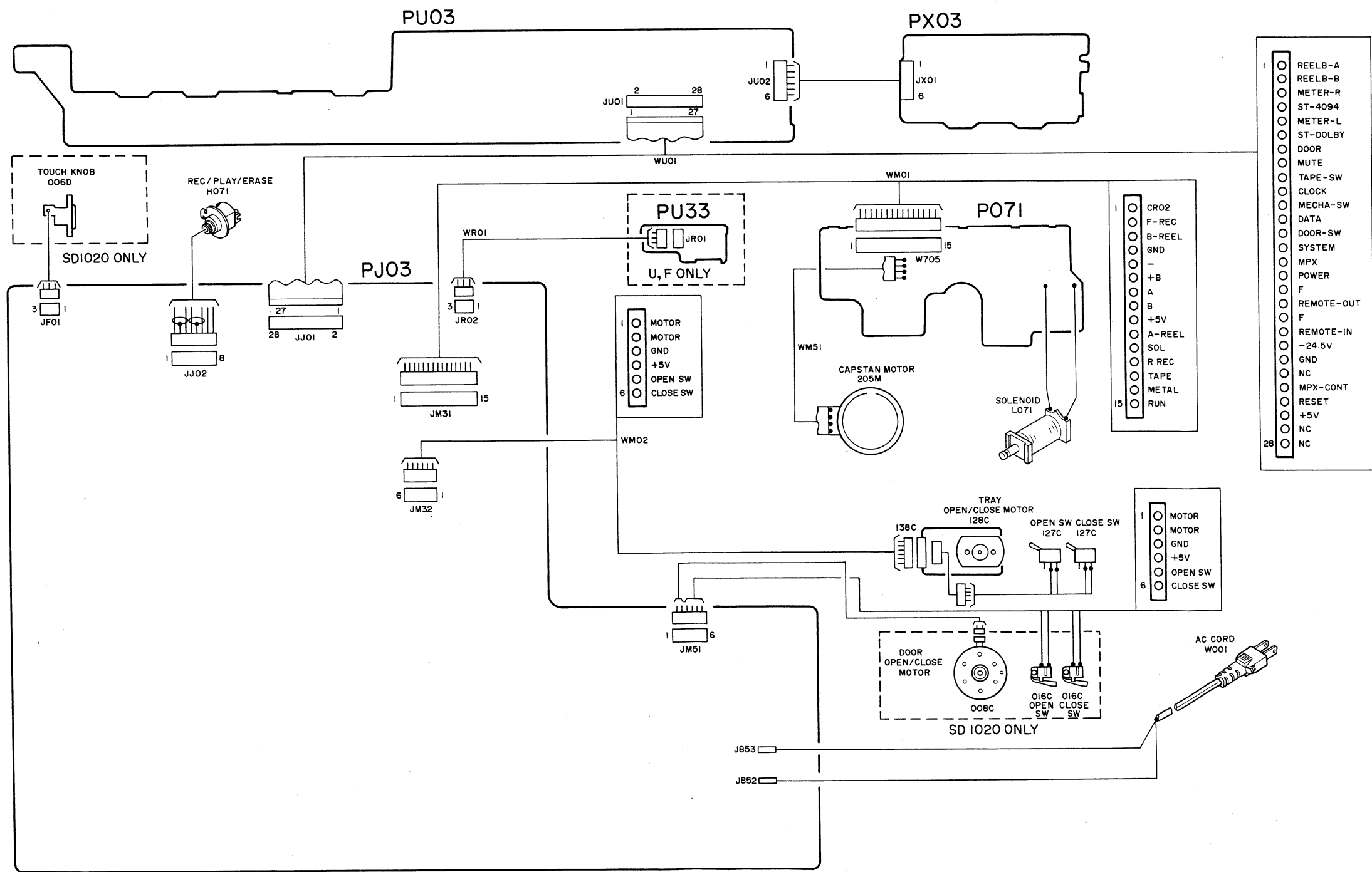
3. CONNECTION DIAGRAM



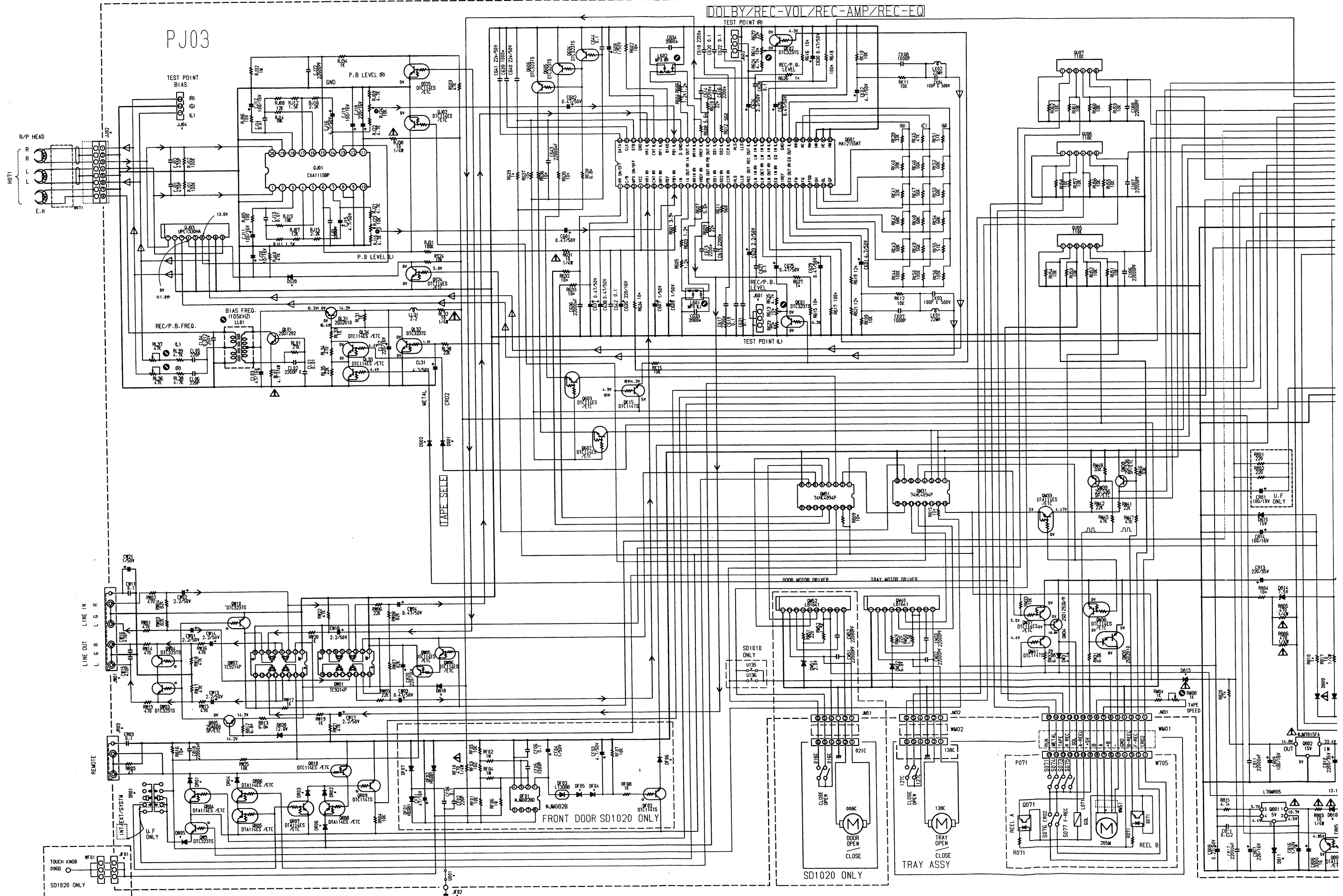
2.2 LEVEL DIAGRAM

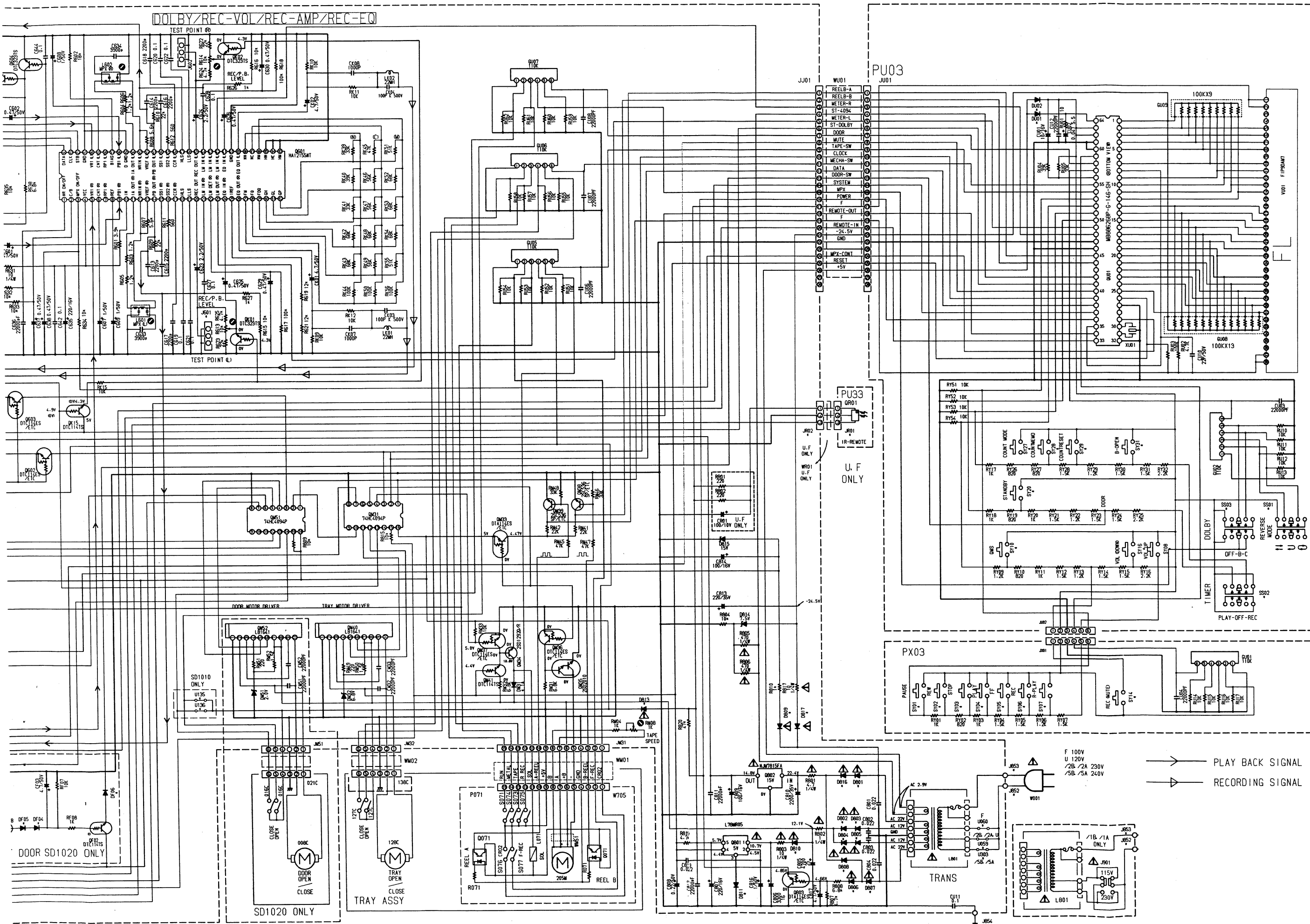


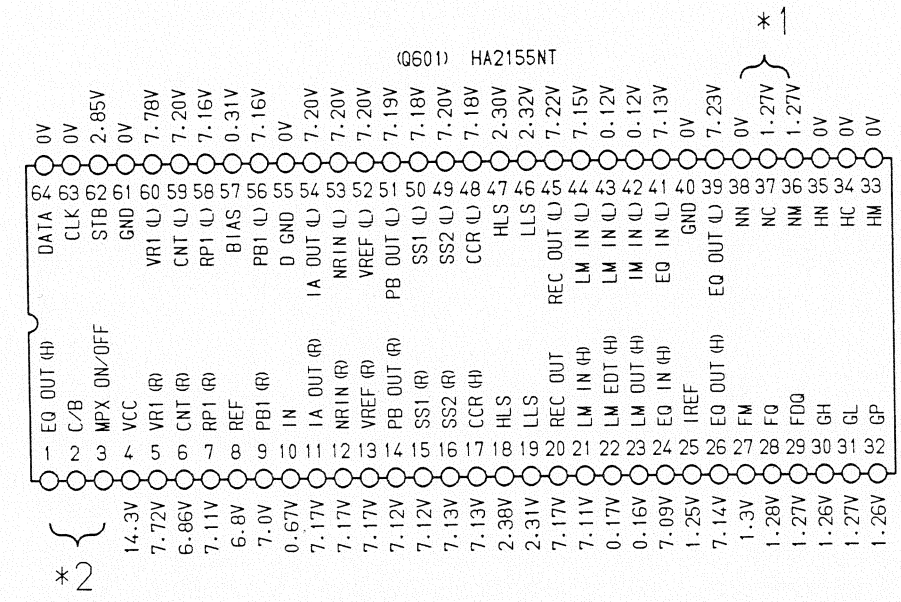
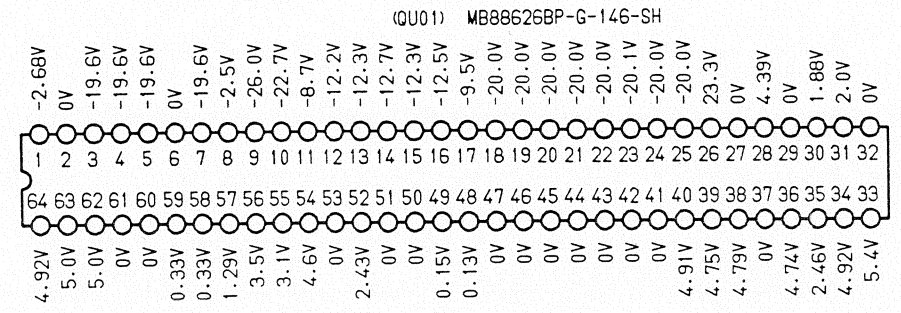
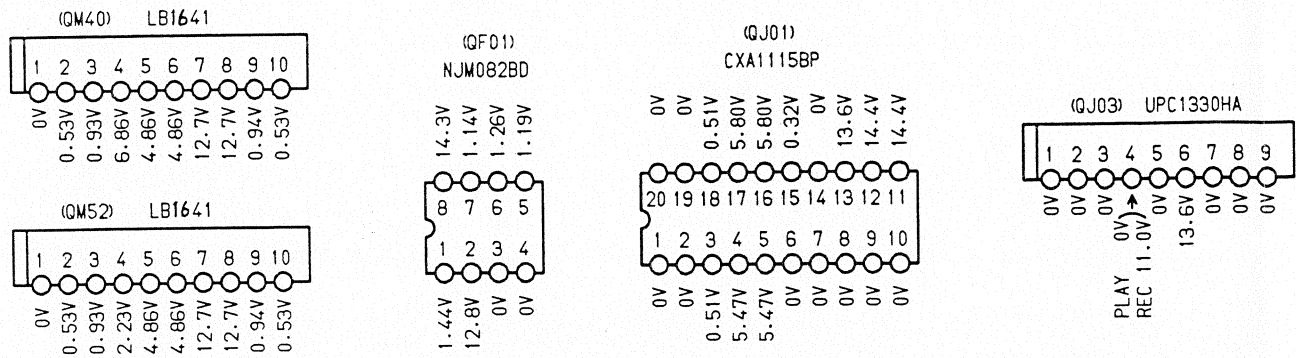
3. CONNECTION DIAGRAM



4. SCHEMATIC DIAGRAM AND PARTS LOCATION (Pattern side)







*1 TAPE SELECTOR

	Ⓢ	Ⓣ	Ⓜ
N	0V	1.27V	1.27V
C	1.27V	0V	1.27V
M	1.27V	1.27V	0V

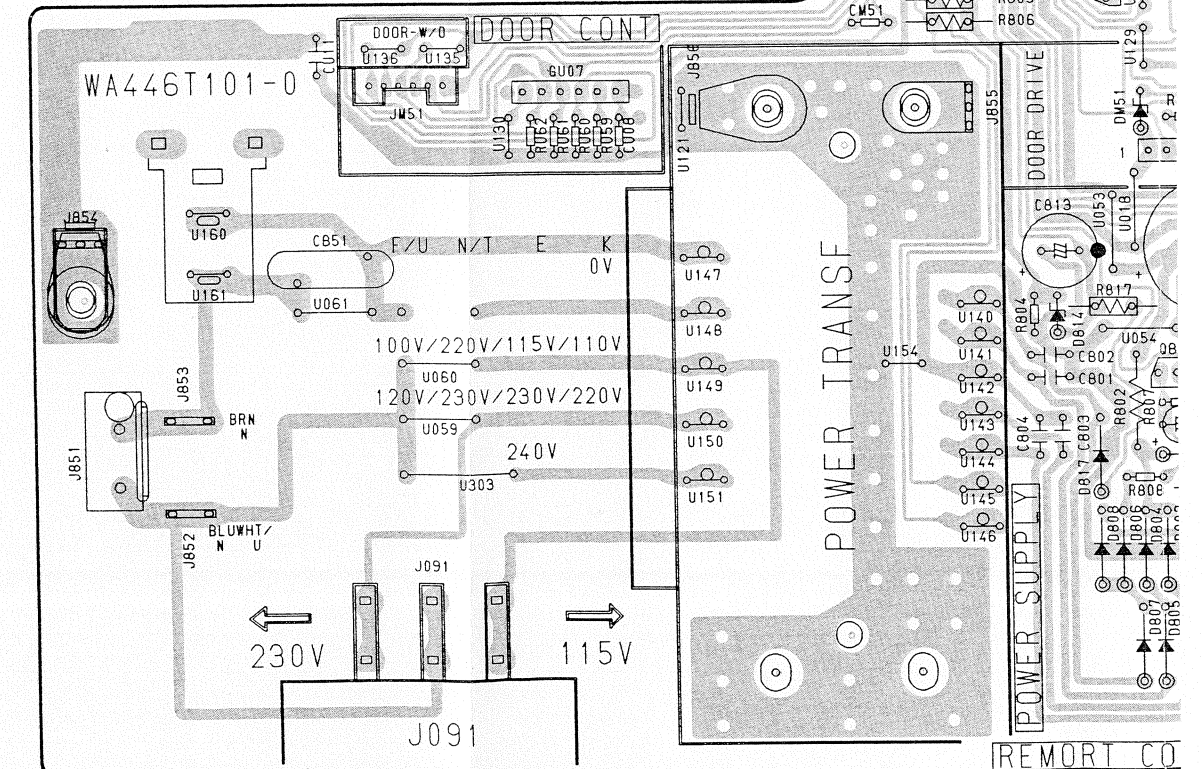
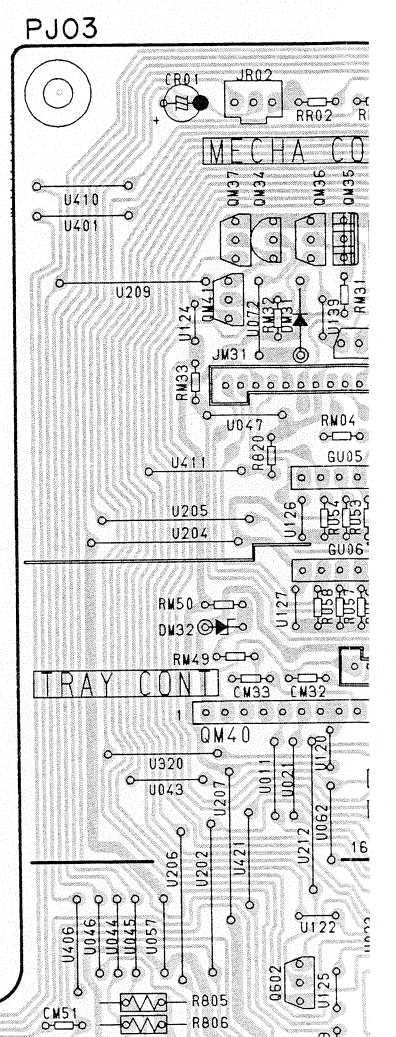
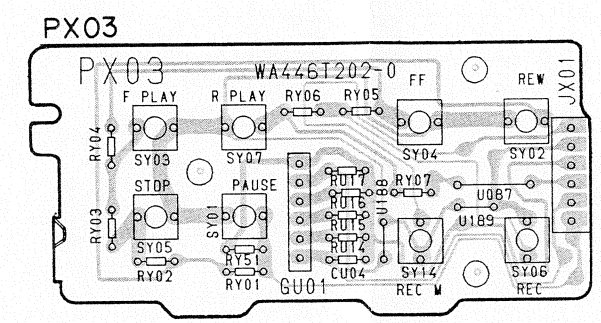
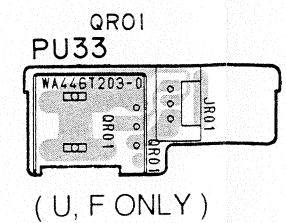
N : NORMAL
C : CrO2
M : METAL

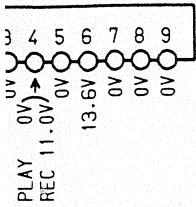
*2 DOLBY NR / MPX

	①	②	③
NR OFF	0V	4.9V	4.9V
NR B	4.9V	0V	0V
NR C	4.9V	4.9V	0V

VOLTAGE : MEASURED AT PLAY POSITION
() : REC POSITION

NOTE ON SAFETY :
Symbol ⚡ Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol ⚡. Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.





SELECTOR

	(39)	(40)
	1.27V	1.27V
7V	0V	1.27V
7V	1.27V	0V

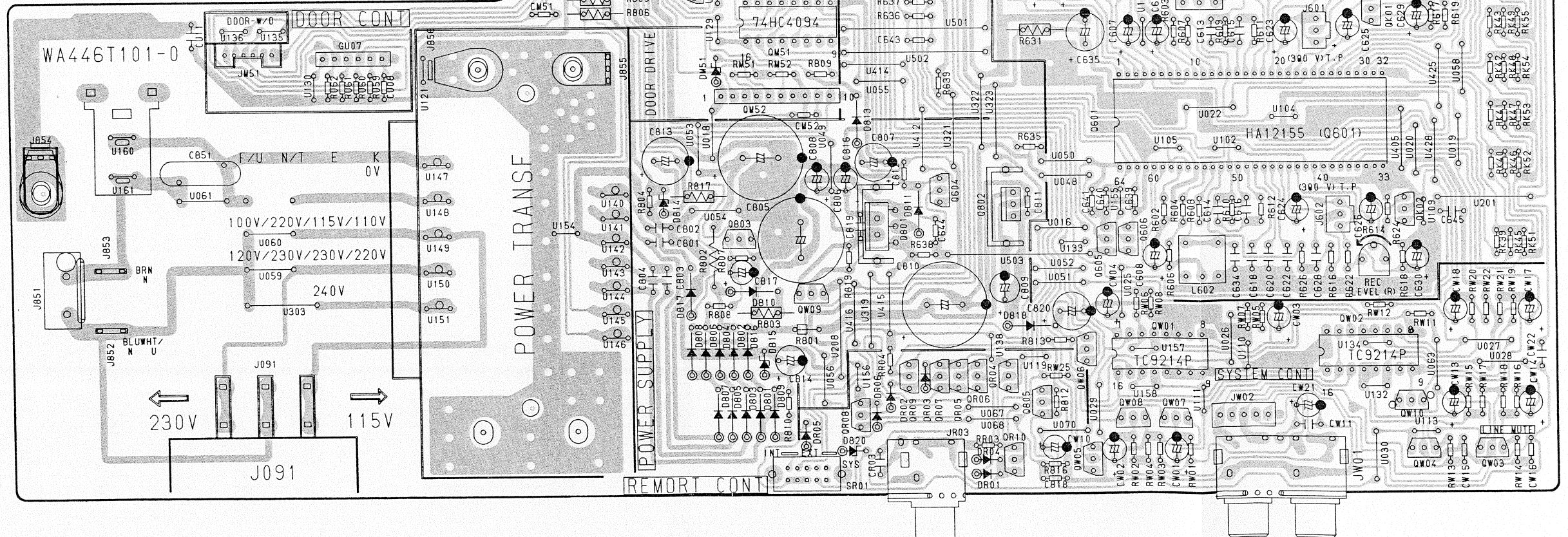
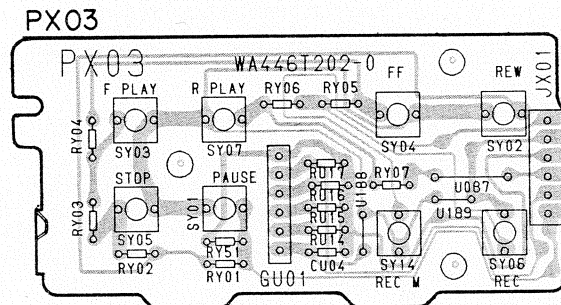
RMAL
2
TAL

AT PLAY POSITION
ION

QRO1
PU33



(U, F ONLY)



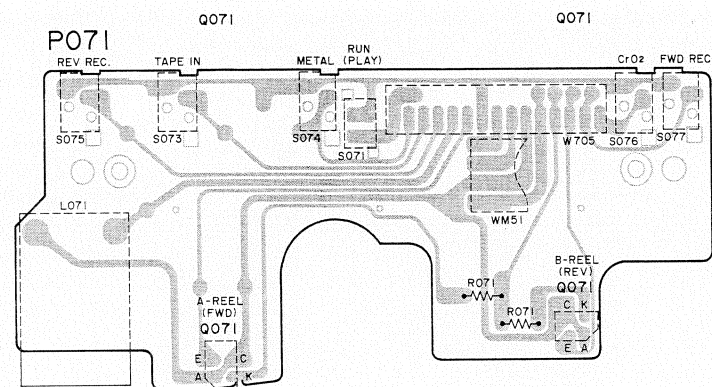
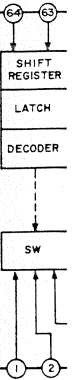
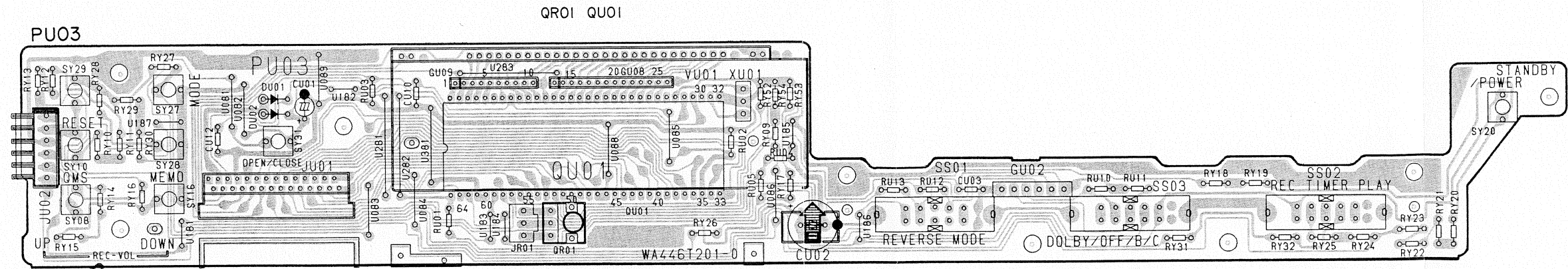
QM41 QM34 QM33 QM35 QM36 QM39 QL01 QF02
QM40 Q602 QM52 QM51 QM31 Q603 QK15 QL32~QL34 QL31 QS24
Q803 QW09 Q801 Q604 Q802 Q605 Q606
QR04~QR10 Q805 QW05~QW08 QW01

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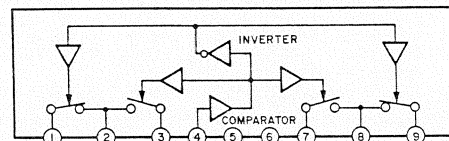
QJ03          QJ01    QF01    QJ02
                QS23
    Q601        QK01    QK02
                QW02    QW10    QW04    QW03

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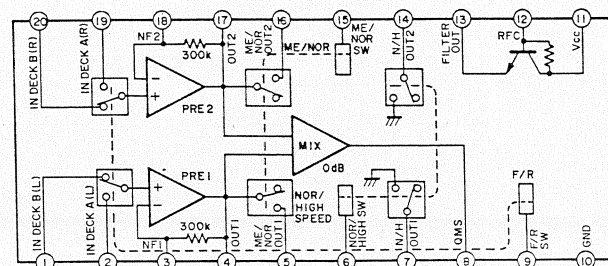
PJ03



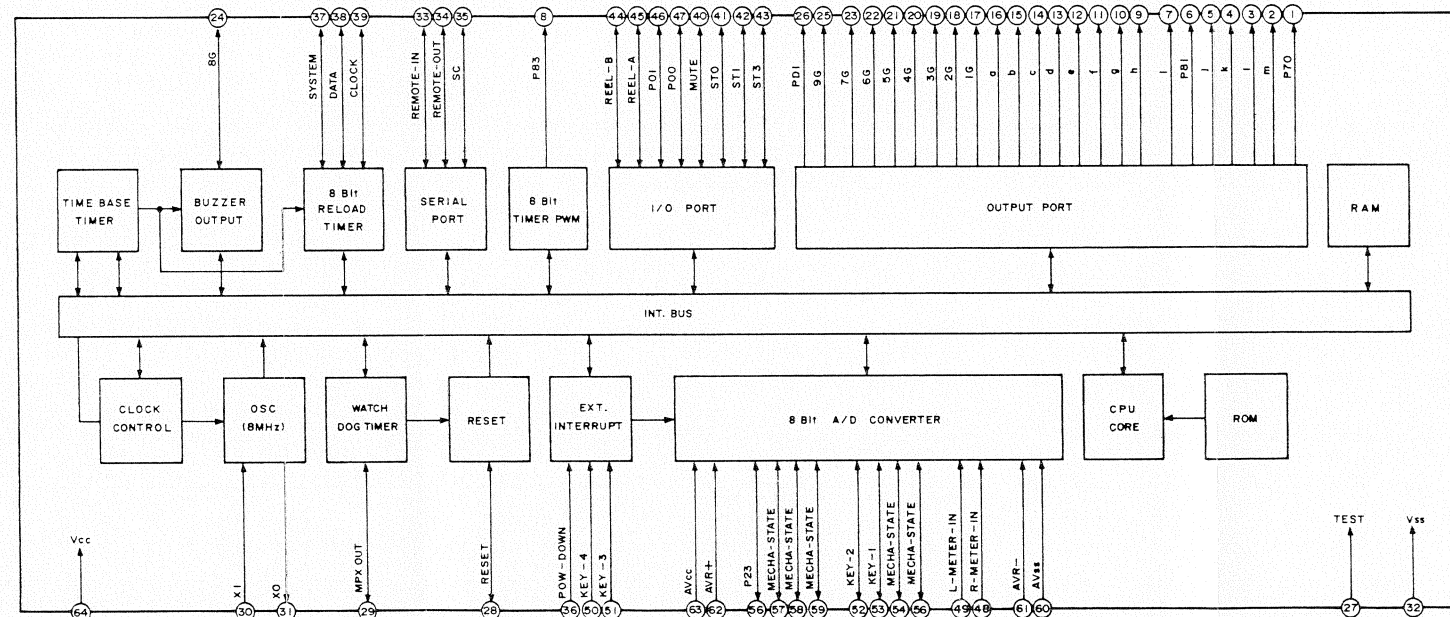
QJ03 : uPC1330HA



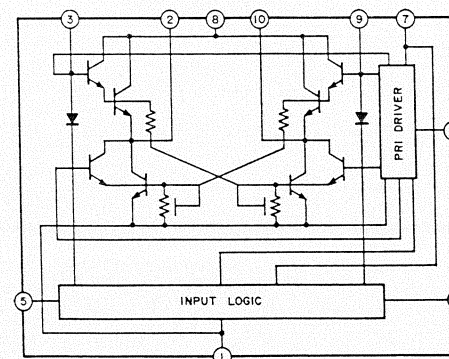
QJ01 : CXA1115BP

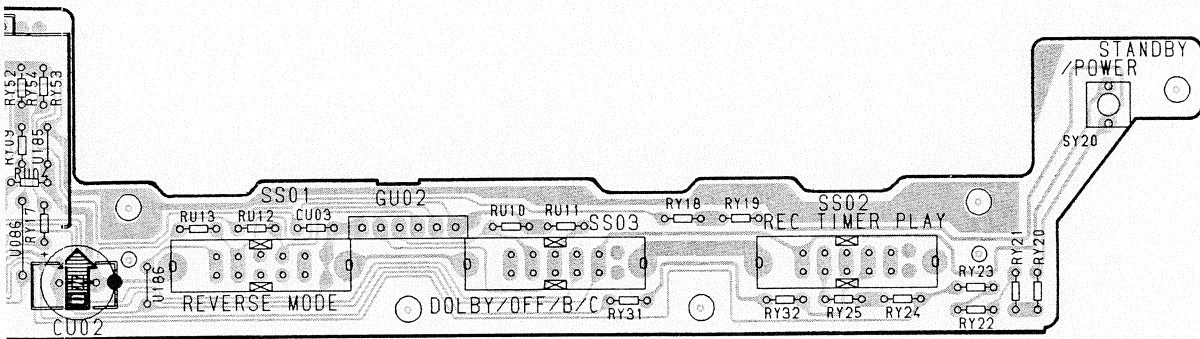


QU01 : MB88626BP-G-146-SH

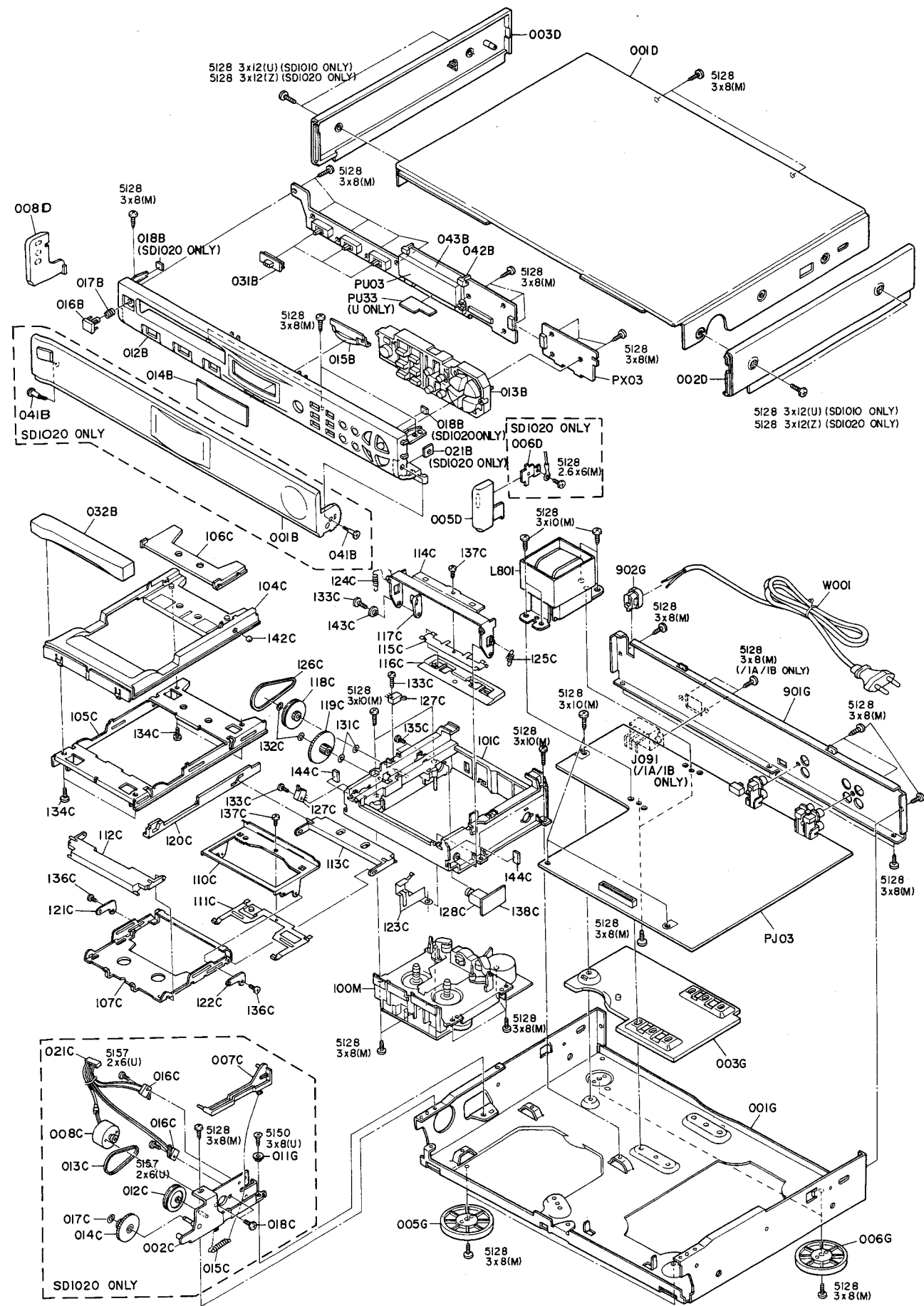


QM40, QM52 : LB1641

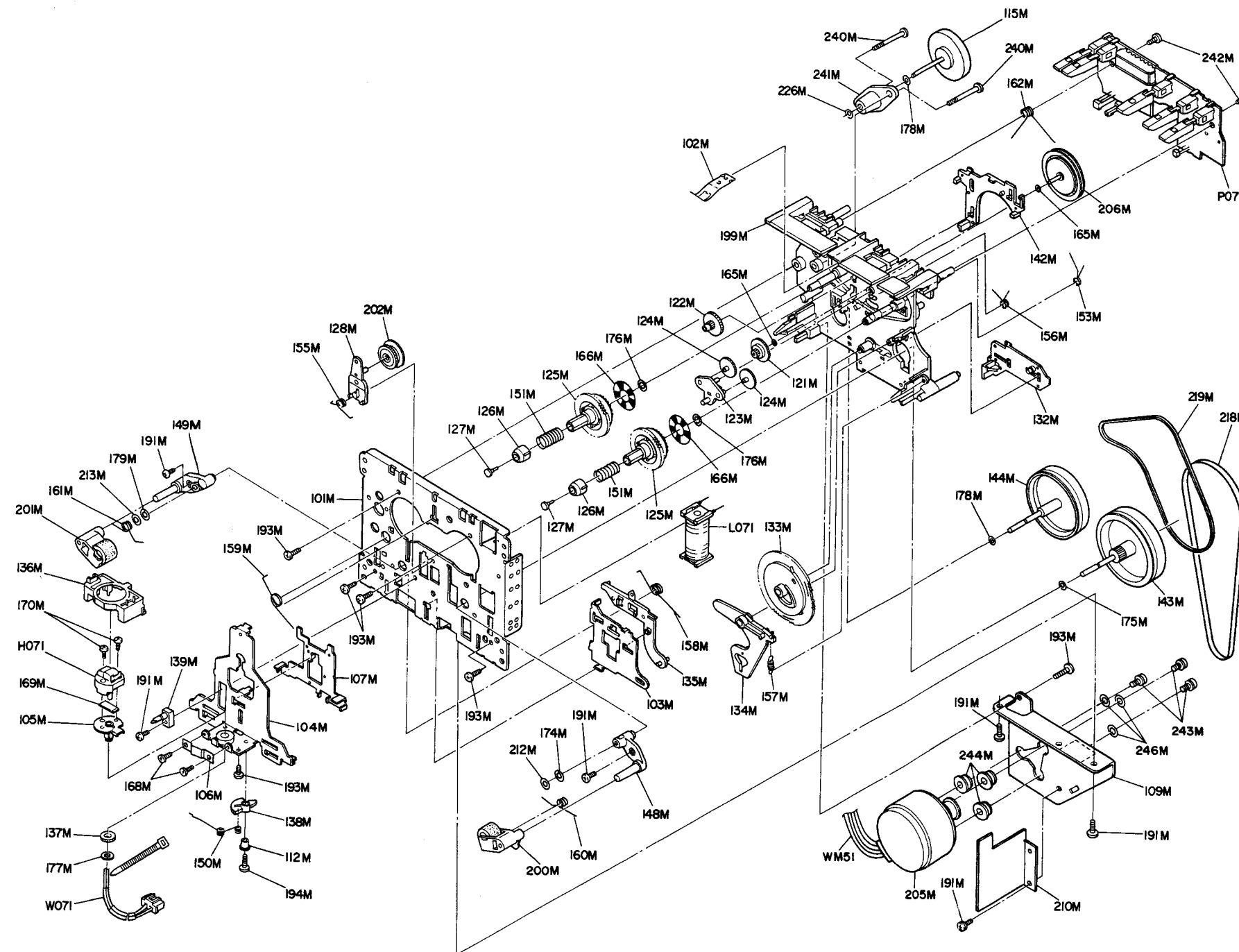




5. EXPLODED VIEW AND PARTS LIST



REF. DESIG.	PART NO.	DESCRIPTION
001B	4822 443 64041	DOOR PANEL ASSY [SD1020]
012B	4822 443 41318	FRONT PANEL [SD1020]
012B	4822 443 41303	FRONT PANEL [SD1010]
013B	4822 410 62941	BUTTON BLOCK [SD1020]
013B	4822 410 62883	BUTTON BLOCK [SD1010]
014B	4822 450 62123	WINDOW, FL [SD1020]
014B	4822 450 62144	WINDOW, FL [SD1010]
015B	4822 381 11434	LENS, IR
016B	4822 410 62813	BUTTON, POWER [SD1020]
016B	4822 410 62877	BUTTON, POWER [SD1010]
017B	4822 492 33409	SPRING, POWER BUTTON
031B	4822 411 61953	KNOB, SLIDE [SD1020]
031B	4822 411 61947	KNOB, SLIDE [SD1010]
032B	4822 454 21102	ESCUTCHEON, TRAY [SD1020]
032B	4822 454 21101	ESCUTCHEON, TRAY [SD1010]
041B	4822 502 21379	SCREW, DOOR [SD1020]
042B	4822 256 92093	HOLDER, FL
007C	4822 404 21283	LEVER [SD1020]
008C	4822 361 21687	D.C.MOTOR ASSY [SD1020]
012C	4822 528 40363	PULLEY [SD1020]
013C	4822 358 31264	BELT [SD1020]
014C	4822 522 33388	GEAR [SD1020]
015C	4822 492 33411	SPRING [SD1020]
016C	4822 271 30768	MINI SWITCH, LEAF [SD1020]
017C	4822 462 71954	STOPPER, WASHER [SD1020]
018C	4822 502 21381	P.H.M. SCREW (M1.7x2) [SD1020]
101C	4822 464 50987	FRAME ASSY
104C	4822 443 64033	TRAY
106C	4822 401 11503	CLAMPER, PLATE
107C	4822 256 92106	HOLDER ASSY
112C	4822 403 70979	ARM
113C	4822 403 70981	ARM
116C	4822 401 11505	CLAMPER, PLATE
117C	4822 403 70983	ARM
118C	4822 528 50363	PULLEY
119C	4822 522 33397	GEAR
120C	4822 522 33398	GEAR
124C	4822 492 71413	SPRING
125C	4822 492 71414	SPRING
126C	4822 358 31268	BELT
127C	4822 277 21716	SLIDE SWITCH
128C	4822 361 21669	D.C.MOTOR ASSY
132C	4822 462 71954	STOPPER, WASHER
133C	4822 502 21449	SCREW, SPECIAL
135C	4822 502 21451	SCREW, SPECIAL
136C	4822 502 21452	SCREW, SPECIAL
137C	4822 502 21453	SCREW, SPECIAL
142C	4822 520 40293	BALL
002D	4822 426 30156	SIDE PANEL (R) [SD1020]
002D	4822 443 41304	SIDE PANEL (R) [SD1010]
003D	4822 426 30157	SIDE PANEL (L) [SD1020]
003D	4822 443 41305	SIDE PANEL (L) [SD1010]
005D	4822 532 12253	BUSHING, SIDE (R) [SD1020]
005D	4822 532 21483	BUSHING, SIDE (R) [SD1010]
006D	4822 281 50181	TOUCH CONTACTOR [SD1020]
008D	4822 532 12254	BUSHING, SIDE (L) [SD1020]
008D	4822 532 21484	BUSHING, SIDE (L) [SD1010]
005G	4822 462 42068	LEG, FRONT [SD1020]
005G	4822 462 42067	LEG, FRONT [SD1010]
006G	4822 462 42069	LEG, REAR [SD1020]
006G	4822 462 42066	LEG, REAR [SD1010]
902G	4822 532 60948	BUSHING, AC CORD
001T	4822 736 21836	PACKING
		USER MANUAL
J011	4822 265 10092	AC CONVERSION PLUG [1/1A/1B]
W011	4822 321 21438	CONNECTIVE CORD
W014	4822 321 62156	CONNECTIVE CORD

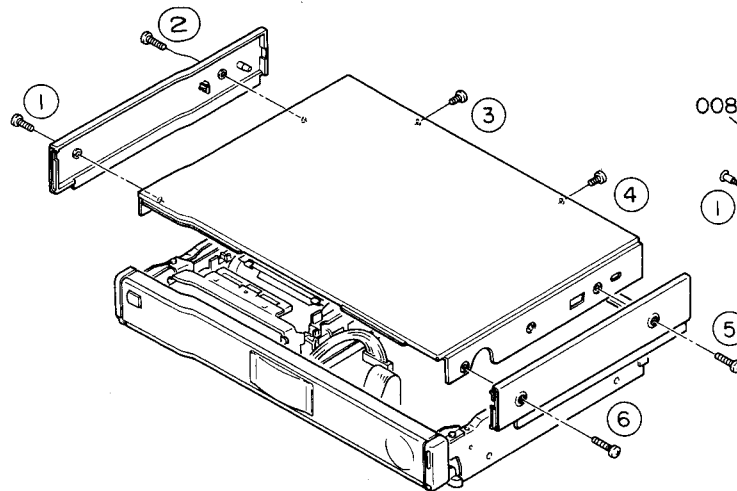


REF. DESIG.	PART NO.	DESCRIPTION
104M	4822 464 50918	HEAD CHASSIS ASSY
105M	4822 462 10524	HEAD PLATE ASSY
106M	4822 492 71166	LEAF SPRING, AZIMUTH
115M	4822 528 90875	IDLER PULLEY ASSY
121M	4822 522 33278	GEAR, CLUTCH
122M	4822 522 33279	GEAR, REW
124M	4822 522 33281	GEAR, FR
125M	4822 522 33282	GEAR, REEL
126M	4822 462 71856	CAP, REEL (A)
127M	4822 532 21462	BUSHING, REEL (B)
133M	4822 522 33283	GEAR, PLAY CAM
136M	4822 528 81477	GUIDE, TAPE
137M	4822 522 33284	GEAR, ROTATION
138M	4822 522 33285	GEAR, RETURN
139M	4822 403 70688	GUIDE, CASSETTE
142M	4822 403 10304	ARM, BRAKE
143M	4822 528 60414	FLYWHEEL (RDH)
144M	4822 528 60415	FLYWHEEL (LDH)
150M	4822 492 71149	SPRING, RETURN
151M	4822 492 71151	SPRING, REEL
153M	4822 492 71153	SPRING, CLUTCH ARM
155M	4822 492 71155	SPRING, PLAY ARM
156M	4822 492 71156	SPRING, SHIFT LEVER
157M	4822 492 71157	SPRING, TRIGGER ARM
158M	4822 492 71417	SPRING, SHIFT
159M	4822 492 71418	SPRING, HEAD CHASSIS
160M	4822 492 71161	SPRING, P ROLLER (R)
161M	4822 492 71162	SPRING, P ROLLER (L)
162M	4822 492 71163	SPRING, BRAKE ARM
165M	4822 532 52473	WASHER, POLYSLIDER
166M	4822 466 62425	SEAL, REFLECT
168M	4822 502 21222	SCREW, AZIMUTH
169M	4822 401 11508	CLAMPER, HEAD WIRE
170M	4822 502 21223	SCREW, HEAD (RVS)
174M	4822 532 52474	WASHER, POLYSLIDER
175M	4822 532 52475	WASHER, POLYSLIDER
176M	4822 532 52471	WASHER, TEFRON
177M	4822 532 52476	WASHER, POLYSLIDER
178M	4822 532 52472	WASHER, POLYSLIDER
179M	4822 532 52477	WASHER, POLYSLIDER
200M	4822 403 70686	ARM, PINCH ROLLER (R) ASSY
201M	4822 403 70687	ARM, PINCH ROLLER (L) ASSY
202M	4822 522 33286	PLAY GEAR ASSY
205M	4822 361 21671	D.C.MOTOR ASSY
206M	4822 528 20754	CLUTCH ASSY
218M	4822 358 31269	BELT, DRIVE (HA)
219M	4822 358 31271	BELT, DRIVE (HB)
226M	4822 532 52469	WASHER
244M	4822 532 12255	WASHER, MOTOR
H071	4822 249 10469	REC./P.B. ERASER HEAD
L071	4822 281 50172	SOLENOID COIL ASSY
Q071	4822 130 82364	PHOTO UNIT
S071	4822 271 30781	MINI SWITCH, RUN
S073	4822 271 30779	MINI SWITCH, TAPE IN
S074	4822 271 30779	MINI SWITCH, METAL
S075	4822 271 30779	MINI SWITCH, R-REC
S076	4822 271 30779	MINI SWITCH, CRO2
S077	4822 271 30779	MINI SWITCH, F-REC
W071	4822 321 62192	CONNECTIVE CORD, 8P

6. DISASSEMBLY

6.1 REMOVING THE TOP COVER AND SIDE PANEL

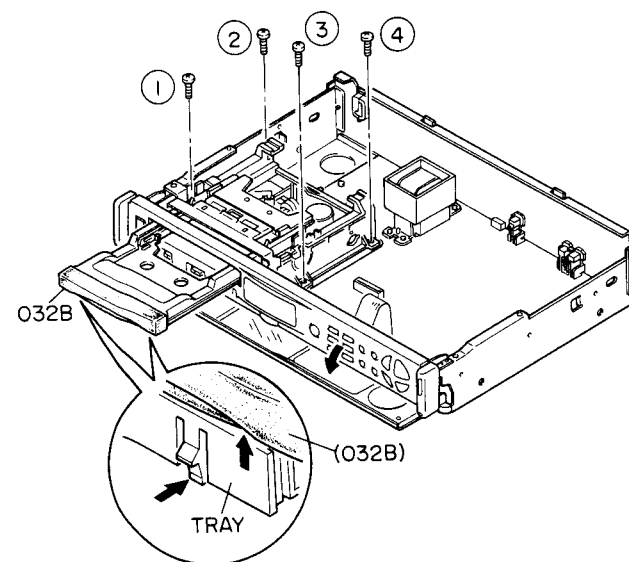
Remove the screws ① ~ ⑥.



6.2 REMOVING THE MECHANISM

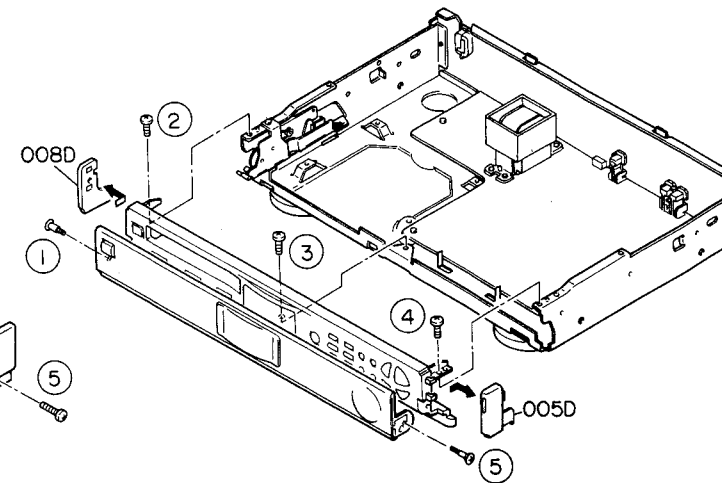
While opening the cassette tray and remove the tray escutcheon (032B) by disengaging two hooks at the bottom side of tray escutcheon.

Close the cassette tray, then remove the screws ① ~ ④.



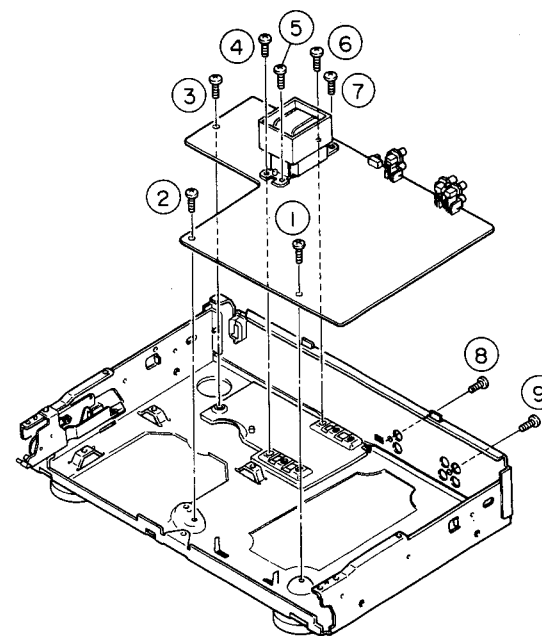
6.3 REMOVING THE FRONT PANEL

Remove the bushings (005D and 008D), then remove the screws ① ~ ⑤.



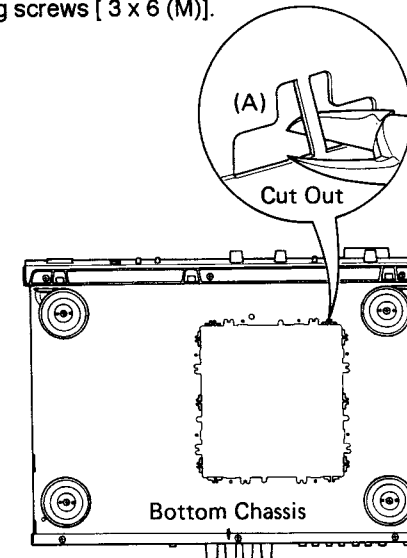
6.4 REMOVING THE MAIN P.W. BOARD

Remove the screws ① ~ ⑨.



7. USE OF SERVICE HOLE

- 1) If the use of the service hole is required, remove the cover by cutting 10 bridges (A) using a tool such as a pair of cutter.
- 2) During this work, be careful of the sharp edges at the cut positions.
- 3) After using the service hole, rotate the cover and fix it using screws [3 x 6 (M)].



This illustration is intended to make the procedure above easier to understand. Therefore, the view of the unit may be different from the illustration.

8. TEST EQUIPMENT REQUIRED FOR SERVICING

For measuring or checking your Cassette Deck, the following instruments and materials are necessary.

- Audio Oscillator (AF OSC)
- Attenuator (600 Ω)
- VTVM
- Oscilloscope
- Wow and Flutter Meter
- Torque Meter (Cassette Type)
- Digital Frequency Counter
- Blank Tapes (Completely erased with bulk eraser)
 - AC-224 (Normal)
 - AC-513 (CrO₂)
 - AC-712 (Metal)

NOTE :

If any doubt is noted in a measured value, use new tape.

- Test Tapes

TCC-112 / MTT-111	Wow and Flutter, Tape Speed
TCC-140 / MTT-112B	Signal-to-Noise Ratio
TCC-130 / MTT-150	Level Adjustment
TCC-161 / MTT-256	Frequency Response (for Normal)
TCC-261 / MTT-356	Frequency Response (for CrO ₂ and Metal)
TCC-192 / MTT-121	Cross Talk
TCC-194 / MTT-141	Channel Separation
TCC-174A / MTT-255M	Azimuth adjustment
(A-BEX) / (TEAC)	
- Mirror cassette 12 μ m padless
 - TCC-902 / MTT-902 : Tape travel check
- Head and guide gauge (M-300)
 - THG-801

9. ELECTRICAL ADJUSTMENTS

(A) Remark for adjustment

- 1) Test tapes damp easily. Erase magnetism of heads and capstans, etc. completely with head erasers before using them.
- 2) Keep away from measuring instruments have transformer inside and tape eraser.
- 3) The method of magnetism erase: turn the head eraser on a little away from the sets. Then, close heads and capstans and move up and down 4 - 5 times. Turn them off after making distance slowly.
- 4) Tools you are going to use should not be magnetized. Erase magnetic them by bulk eraser sometimes.
- 5) Adjust semi-fixed resistor for adjustment and variable coil, etc. spin and the number of times as less as possible.
- 6) Adjust and check SPEED and WOW, etc. by normal sets condition.
- 7) A little bond lock and pay attention to sticking around and flowing.
- 8) Check AC voltage input and audio signal generator output voltage 2 - 3 times per day to operate as normal.

(B) S.R.L / Standard Recording Level

1. S.R.L (Standard Recording Level) which is 160 nWb/m on a tape by* OPEN CIRCUIT MAGNETIC FLUX. The relationship among recording level, meter scale and test tape are as follows:

• OPEN CIRCUIT MAGNETIC FLUX (nWb/m)	160	185	200	220	250
• OUR STANDARD METER SCALE	-3	-2	-1	0	+1 dB
• CLOSED CIRCUIT MAGNETIC FLUX (nWb/m)	..	160	185	200	***

(*) : OPEN CIRCUIT MAGNETIC FLUX = CLOSED CIRCUIT MAGNETIC FLUX + LEAK MAGNETIC FLUX.

(**) : S.R.L

(***) : TCC-130 (DOLBY REFERENCE LEVEL) (MTT-150)

(****) : TCC-120 (IEC REFERENCE LEVEL) (MTT-212)

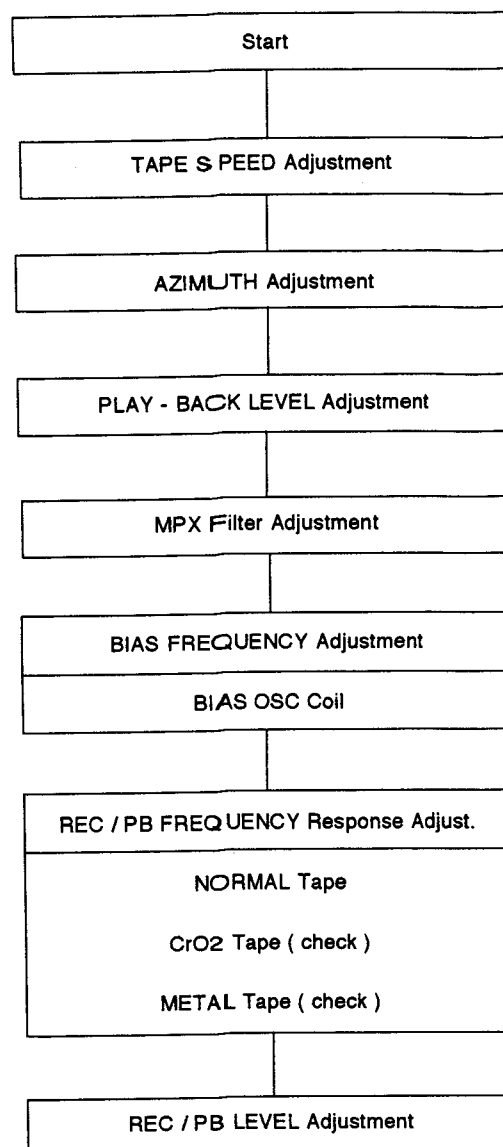
(Note) The display between -1dB to -3dB is not available in this unit.

2. S.R.L Setting As for sets, DOLBY LEVEL is usually standard, it will be as follows:

- 1) Recording condition is to add 1 kHz, 100 mV signals on LINE INPUT.
- 2) Adjust REC VOLUME and should be 300 mV at DOLBY test point J601 / J602.
- 3) From this condition, input level is -3db (3dB down by attenuator). It is the standard recording condition at STANDARD RECORDING LEVEL. (S.R.L)

(Note) Depending on measurement items, playing standard level changes a lot. Recording level of specified test tape decides the standard level.

ADJUSTMENT FLOW CHART



9.1 TAPE SPEED ADJUSTMENT

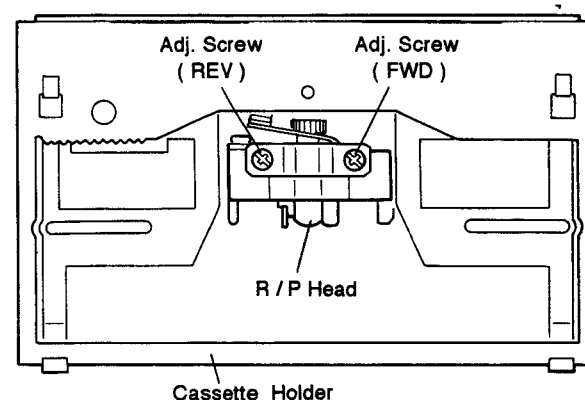
- 1) Play the middle of the tape and adjust semi-fixed resistor RM08 to be 3000 Hz (2990 - 3010 Hz).
- 2) After the set-up, play it again and check within range.

Remarks:

- 1) Carry them out the set condition.
- 2) Do not test the mechanism when the condition has a big difference of normal temperature.

9.2 HEAD AZIMUTH ADJUSTMENT AND PLAY-BACK FREQUENCY RESPONSE CHECK

- 1) Play the frequency response tape and screw the AZIMUTH adjust screw at 12.5 kHz signal. Then, set output maximum to the screwed-up direction.
- 2) In case L / R peak point is difference, turn the lower channel maximum, keep the L / R balance.
- 3) Bondlock adjust screw.
- 4) Next, 315 Hz signal should be 0 dB and read 12.5 kHz signal level. Check the value whether it is normal.
- 5) Also in REVERSE mode, perform the steps 1 ~ 4.



9.3 PLAY - BACK LEVEL ADJUSTMENT

- 1) Play the DOLBY test tape, adjust semi-fixed resistors for adjustment RJ23 (L), RJ24 (R) at test points J601 (L), J602 (R). Then, set 300 mV.
- 2) After adjustment, replay and check it again.

Remark:

In case of drifting replay output, check the tape running and the test tape because it might be defective.

9.4 MPX FILTER ADJUSTMENT

- 1) Should be recording monitor by DOLBY LEVEL. Input signal level is 0 dB at 1 kHz.
- 2) Input signal frequency is 19 kHz (within ± 10 Hz). Adjust L601 (L), L602 (R) that MPX Filter switch should be "ON" and the level is minimum.

Remark:

It is under -40 dB as usual.

9.5 RECORDING BIAS FREQUENCY ADJUSTMENT

- 1) Operate to REC mode at METAL position.
- 2) High impedance through test point JJ04 and connect to measurement (FREQUENCY COUNTER and OSCILLOSCOPE).
- 3) Adjust a bias-oscillation coil LL01 to be 105 kHz bias-oscillated frequency.

Remark:

It is easy that make a high impedance sensor by 1 M ohm resistor.

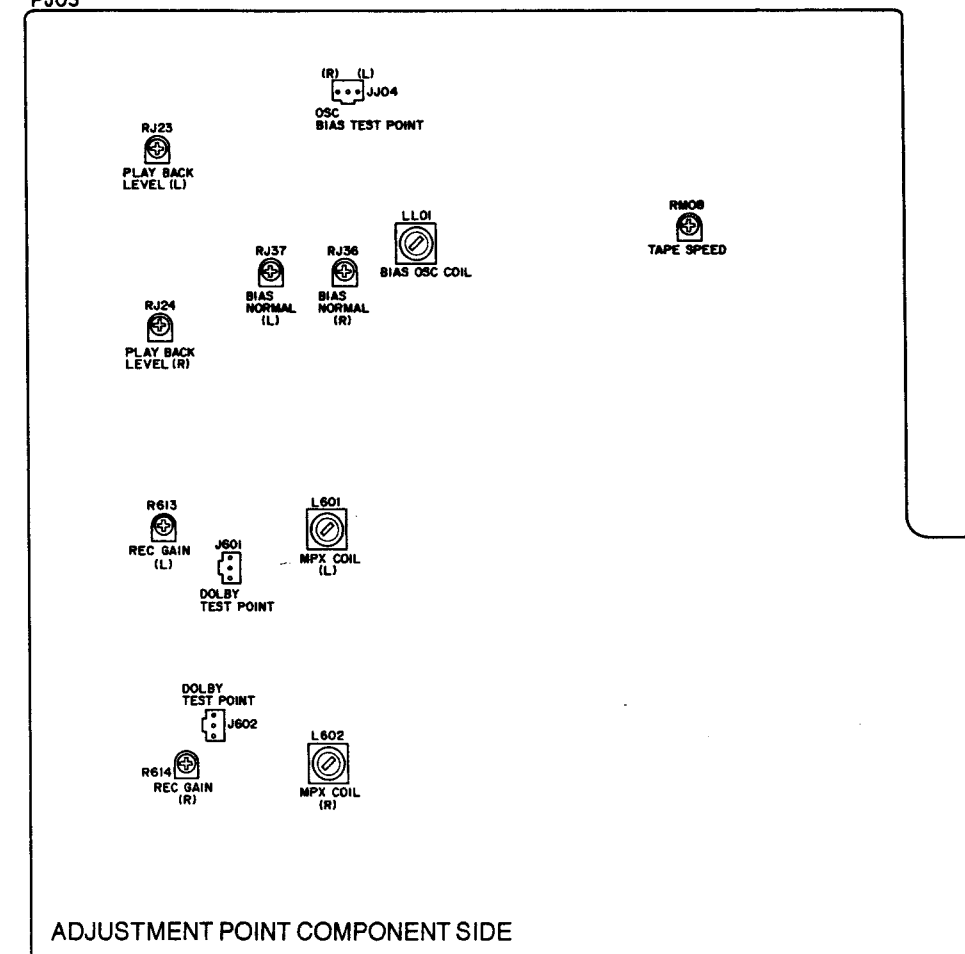
9.6 REC/PLAY - BACK FREQUENCY RESPONSE ADJUSTMENT

- 1) Decrease -25 dB INPUT LEVEL from S.R.L setting. Record 1 kHz and 12.5 kHz signals at DOLBY-C position. (NORMAL tape position)
- 2) REWIND and PLAY it, and read difference level at 1 kHz and 12.5 kHz.
- 3) Adjust semi-fixed resistor RL37 (L), RL36 (R) that the level of differences 1 kHz and 12.5 kHz should be 0 ~ +1.0 dB.
- 4) Only check CrO₂ and METAL tape positions.

9.7 REC / PLAY - BACK LEVEL ADJUSTMENT

- 1) By NORMAL tape position, set S.R.L setting and set monitor level scale 0 dB.
- 2) Do REWIND and PLAY it and adjust semi-fixed resistor R613 (L), R614 (R) to be 1 kHz level within ± 0.5 dB.
- 3) Only check CrO₂ and METAL tapes positions. In these case, to be 1 kHz level within ± 1.0 dB.

PJ03



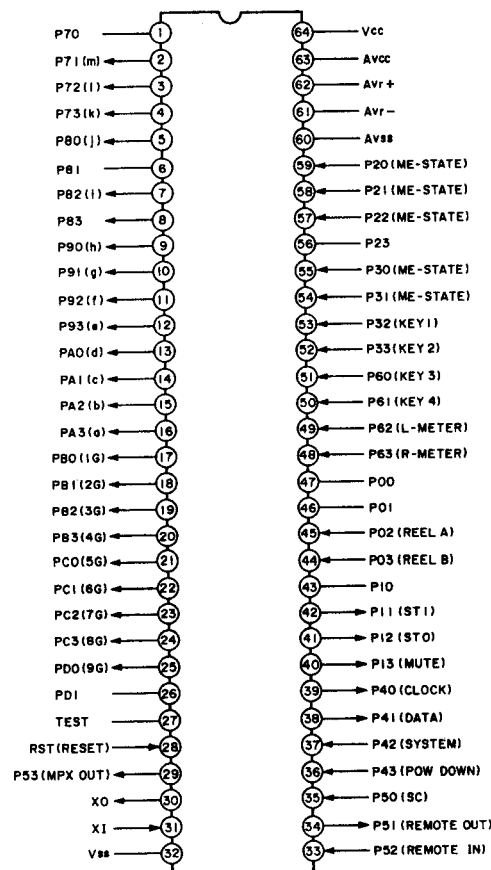
10. SERVICE PROGRAM

- 1) While pressing REC VOLUME UP and DOWN keys together, connect the power plug to AC outlet.
- 2) When QMS Key is pressed, all indicators in FL display light up and out. Then, each segment lights up sequentially.

- 3) Recording starts automatically when REC Key is pressed. When REW Key is pressed, the unit enters in the quick review mode, and play starts from the beginning of the recording.
- 4) Service program will finish by disconnecting the power plug from AC outlet.

11. MICROPROCESSOR DATA

MB88626BP-G-146-SH



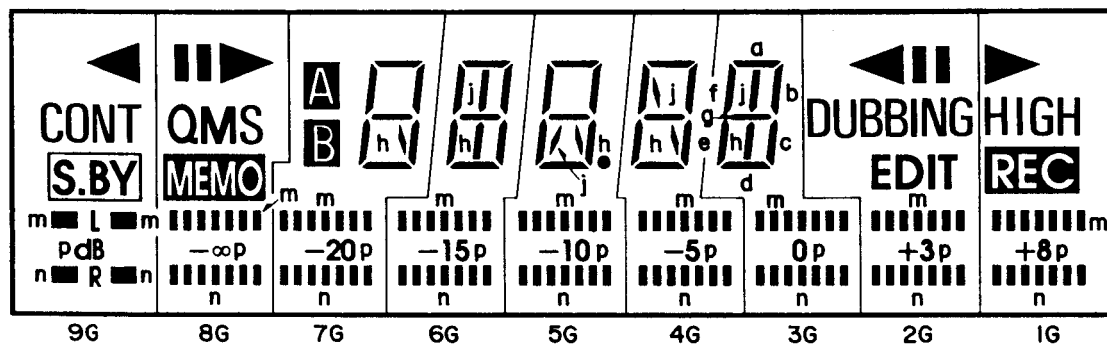
Pin Nbr.	Pin Name	I/O	Action	Function	Pin Nbr.	Pin Name	I/O	Action	Function
1	P70	-	-	Not Used	33	P52 (REMOTE IN)	I	L	Remote Input
2	P71 (m)	O	H	FL Display Anode Drive	34	P51 (REMOTE OUT)	O	L	Remote Output
3	P72 (l)	O	H		35	P50 (SC)	I	-	Clock In
4	P73 (k)	O	H		36	P43 (POW DOWN)	I	H	Power Off Detector (INT2)
5	P80 (j)	O	H		37	P42 (SYSTEM)	I	H	System Select
6	P81	-	-	Not Used	38	P41 (DATA)	O	H	Dolby, Rec Meter, Volume, Motor, Speed, On/Off, Solenoid
7	P82 (i)	O	H	FL Display Anode Drive	39	P40 (CLOCK)	O	H/L	HA12155, 74HC4094
8	P83	O	H	Clock	40	P13 (MUTE)	O	H/L	Rec. Mute
9	P90 (h)	O	H	FL Display Anode Drive	41	P12 (ST 0)	O	H/L	HA12155 (Dolby, Rec-Amp, Meter, Volume) Strobe
10	P91 (g)	O	H		42	P11 (ST 1)	O	H/L	Motor, Speed, On/Off, Solenoid
11	P92 (f)	O	H		43	P10	-	-	Not Used
12	P93 (e)	O	H		44	P03 (REEL B)	I	H/L	Reel
13	PA0 (d)	O	H		45	P02 (REEL A)	I	H/L	
14	PA1 (c)	O	H		46	P01	-	-	Not Used
15	PA2 (b)	O	H		47	P00	-	-	Not Used
16	PA3 (a)	O	H		48	P63 (R-METER)	I	DC	R-ch. Level Meter DC Input
17	PB0 (1G)	O	H	FL Display Grid Drive	49	P62 (L-METER)	I	DC	L-ch. Level Meter DC Input
18	PB1 (2G)	O	H		50	P61 (KEY 4)	I	DC	Key Switch
19	PB2 (3G)	O	H		51	P60 (KEY 3)	I	DC	
20	PB3 (4G)	O	H		52	P33 (KEY 2)	I	DC	
21	PC0 (5G)	O	H		53	P32 (KEY 1)	I	DC	
22	PC1 (6G)	O	H		54	P31 (ME-STATE)	I	DC	Mechanism State
23	PC2 (7G)	O	H		55	P30 (ME-STATE)	I	DC	
24	PC3 (8G)	O	H		56	P23	-	-	Not Used
25	PD0 (9G)	O	H		57	P22 (ME-STATE)	I	DC	Mechanism State
26	PD1	-	-	Not Used	58	P21 (ME-STATE)	I	DC	
27	TEST	-	-	Not Used	59	P20 (ME-STATE)	I	DC	
28	RST (RESET)	I	L	μ-Processor Reset	60	Avss	-	-	GND
29	P53 (MPX OUT)	O	H	MPX Control Output	61	Avr -	-	-	GND
30	XO	O	-	OSC	62	Avr +	-	-	+5V
31	XI	I	-	OSC	63	Avcc	-	-	+5V
32	Vss	-	-	GND	64	Vcc	-	-	+5V

12. FL DISPLAY

12.1 TERMINAL CONNECTION

TERMINAL NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
ELECTRODE	F1	F1	NP	NP	9G	8G	7G	6G	NC	5G	4G	3G	2G	1G	NC	NC	P1	P2	P3
TERMINAL NO.	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
ELECTRODE	P4	P5	P6	P7	NP	NP	P8	P9	P10	P11	P12	P13	NP	NP	NP	NP	NP	F2	F2

Note F : Filament NP : No Pin
G : Grid NC : No Connection
P : Anode



12.2 INTERNAL CONNECTION

	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1			a	a	a	a	a		
P2			b	b	b	b	b		
P3			c	c	c	c	c		
P4			d	d	d	d	d		
P5		□□	e	e	e	e	e	□□	
P6	◁	▷	f	f	f	f	f	◁	▷
P7	CONT	QMS	g	g	g	g	g	DUBBING	HIGH
P8	S.BY	MEMO	h	h	h	h	h	EDIT	REC
P9	L		A	j	j	j	j		
P10	R		B		•				
P11	m	m	m	m	m	m	m	m	m
P12	n	n	n	n	n	n	n	n	n
P13	p	p	p	p	p	p	p	p	p

13. ELECTRICAL PARTS LIST

ASSIGNMENT OF COMMON PARTS CODES.

RESISTOR

R * * * : (1) GD05 xxx 140, Carbon film fixed resistor, $\pm 5\%$ 1/4W
R * * * : (2) GD05 xxx 160, Carbon film fixed resistor, $\pm 5\%$ 1/6W

① — Resistance value

Examples ;

① Resistance value

0.1 Ω 001	10 Ω 100	1 k Ω 102	100 k Ω 104
0.5 Ω 005	18 Ω 180	2.7 k Ω 272	680 k Ω 684
1 Ω 010	100 Ω 101	10 k Ω 103	1 M Ω 105
6.8 Ω 068	390 Ω 391	22 k Ω 223	4.7 M Ω 475

(Note) Please distinguish 1/4W from 1/6W by the shape of parts used actually.

C * * * : CERAMIC CAP.

(1) DD1x xxx 370, Ceramic capacitor
 Disc type
 Temp. coeff. P350 ~ N1000, 50V

① ②
 Capacity value
 Tolerance

Examples ;

① Tolerance (Capacity deviation)

$\pm 0.25\text{pF}$ 0
 $\pm 0.5\text{pF}$ 1
 $\pm 5\%$ 5

* Tolerance of COMMON PARTS handled here are as follows :

0.5pF ~ 5pF $\pm 0.25\text{pF}$
 6pF ~ 10pF $\pm 0.5\text{pF}$
 12pF ~ 560pF $\pm 5\%$

② Capacity value

0.5 pF 005	3 pF 030	100 pF 101
1 pF 010	10 pF 100	220 pF 221
1.5 pF 015	47 pF 470	560 pF 561

C * * * : CERAMIC CAP.

(1) DK16 xxx 300, High dielectric constant ceramic capacitor
 Disc type
 Temp. chara. 2B4, 50V

①
 Capacity value

Examples ;

② Capacity value

100 pF 101	1000 pF 102	10000 pF 103
470 pF 471	2200 pF 222	

C * * * : ELECTROLY CAP. ($\frac{\square}{\square}$), FILM CAP. ($\frac{\square}{\square}$)

(1) EA xxx xxx 10, Electrolytic capacitor
 One-way lead type,
 Tolerance $\pm 20\%$

① ②
 Working voltage
 Capacity value

Examples ;

① Capacity value

0.1 μF 104	4.7 μF 475	100 μF 107
0.33 μF 334	10 μF 106	330 μF 337
1 μF 105	22 μF 226	1100 μF 118
		2200 μF 228

② Working voltage

6.3 V 006	25 V 025
10 V 010	35 V 035
16 V 016	50 V 050

(2) DF15 xxx 350, Plastic film capacitor
 One-way type, Mylar $\pm 5\%$ 50V

①
 Capacity value

Examples ;

① Capacity value

0.001 μF (1000pF) 102	0.1 μF 104
0.0018 μF 182	0.56 μF 564
0.01 μF 103	1 μF 105
0.015 μF 153	

NOTE : The above CODES (R * * *, R * * *, C * * *, C * * * and C * * *) are omitted on the schematic diagram in some case.
 On the occasion, be confirmed common parts on the parts list.

REF. DESIG.	PART NO.	DESCRIPTION
		PJ03-AUDIO/POWER/LOGIC CIRCUIT BOARD
		PJ03-CAPACITORS
CF01	4822 124 41539	ELECT 47 μF 16V [SD1020]
CF02	4822 126 10408	CERAMIC 220PF $\pm 10\%$ 50V [SD1020]
CF03	4822 124 22274	ELECT 4.7 μF 50V [SD1020]
CF04	4822 124 41543	ELECT 1 μF 50V [SD1020]
CF05	4822 122 33639	CERAMIC 1000PF $\pm 10\%$ 50V [SD1020]
CF06	4822 122 40617	CERAMIC 0.1 μF +80%-20% 50V [SD1020]
CJ01	4822 126 11127	CERAMIC 470PF $\pm 10\%$ 50V
CJ02	4822 126 11127	CERAMIC 470PF $\pm 10\%$ 50V
CJ11	4822 124 90354	ELECT 100 μF 16V
CJ12	4822 124 90354	ELECT 100 μF 16V
CJ15	4822 124 22274	ELECT 4.7 μF 50V
CJ16	4822 124 22274	ELECT 4.7 μF 50V
CJ18	4822 124 90364	ELECT 220 μF 16V
CJ19	4822 124 90354	ELECT 100 μF 16V
CJ20	4822 124 90352	ELECT 10 μF 16V
CJ21	4822 122 40588	CERAMIC 0.022 μF $\pm 20\%$ 50V
CJ22	4822 122 40588	CERAMIC 0.022 μF $\pm 20\%$ 50V
CK01	4822 124 22274	ELECT 4.7 μF 50V
CK02	4822 124 22274	ELECT 4.7 μF 50V
CK03	4822 122 31211	CERAMIC 100PF $\pm 10\%$ 500V
CK04	4822 122 31211	CERAMIC 100PF $\pm 10\%$ 500V
CK07	4822 122 33639	CERAMIC 1000PF $\pm 10\%$ 50V
CK08	4822 122 33639	CERAMIC 1000PF $\pm 10\%$ 50V
CL03	4822 124 41539	ELECT 47 μF 16V
CL04	4822 121 43774	FILM 0.012 μF $\pm 10\%$ 250V
CL05	4822 122 31173	CERAMIC 220PF $\pm 10\%$ 500V
CL06	4822 122 31173	CERAMIC 220PF $\pm 10\%$ 500V
CL31	4822 124 22274	ELECT 4.7 μF 50V
CL32	4822 124 90364	ELECT 220 μF 16V
CM32	4822 122 40588	CERAMIC 0.022 μF $\pm 20\%$ 25V
CM33	4822 122 40588	CERAMIC 0.022 μF $\pm 20\%$ 25V
CM51	4822 122 40588	CERAMIC 0.022 μF $\pm 20\%$ 25V [SD1020]
CM52	4822 122 40588	CERAMIC 0.022 μF $\pm 20\%$ 25V [SD1020]
CR01	4822 124 90353	ELECT 100 μF 10V [U]
CR03	4822 122 40617	CERAMIC 0.1 μF +80%-20% 50V
CU06	4822 122 40588	CERAMIC 0.022 μF $\pm 20\%$ 25V
CU08		
CU11	4822 122 40617	CERAMIC 0.1 μF +80%-20% 50V
CW01	4822 124 90357	ELECT 2.2 μF 50V
CW02	4822 124 90357	ELECT 2.2 μF 50V
CW03	4822 124 22273	ELECT 0.47 μF 50V
CW04	4822 124 22273	ELECT 0.47 μF 50V
CW11	4822 122 40617	CERAMIC 0.1 μF +80%-20% 50V
CW13	4822 124 90357	ELECT 2.2 μF 50V
CW14	4822 124 90357	ELECT 2.2 μF 50V
CW15	4822 126 11127	CERAMIC 470PF $\pm 10\%$ 50V
CW16	4822 126 11127	CERAMIC 470PF $\pm 10\%$ 50V
CW17	4822 124 90357	ELECT 2.2 μF 50V
CW18	4822 124 90357	ELECT 2.2 μF 50V
CW21	4822 124 41543	ELECT 1 μF 50V
C601	4822 124 22273	ELECT 0.47 μF 50V
C602	4822 124 22273	ELECT 0.47 μF 50V
C607		
?	4822 124 41543	ELECT 1 μF 50V
C609		
C623	4822 124 90357	ELECT 2.2 μF 50V

REF. DESIG.	PART NO.	DESCRIPTION
C624	4822 124 90357	ELECT 2.2μF 50V
C625	4822 124 22273	ELECT 0.47μF 50V
C626	4822 124 22273	ELECT 0.47μF 50V
C629	4822 124 22273	ELECT 0.47μF 50V
C630	4822 124 22273	ELECT 0.47μF 50V
C635	4822 124 90364	ELECT 220μF 16V
C636	4822 122 40588	CERAMIC 0.022μF ± 20% 25V
C637	4822 124 22273	ELECT 0.47μF 50V
C638	4822 124 22273	ELECT 0.47μF 50V
C639	4822 122 33639	CERAMIC 1000PF ± 10% 50V
C640	4822 126 10362	CERAMIC 22PF ± 5% 50V
C641	4822 126 10362	CERAMIC 22PF ± 5% 50V
C642	4822 122 40617	CERAMIC 0.1μF +80%-20% 50V
C643	4822 122 40588	CERAMIC 0.022μF ± 20% 25V
C644	4822 122 40617	CERAMIC 0.1μF +80%-20% 50V
C801	4822 122 30103	CERAMIC 0.022μF +80%-20% 50V
C804	4822 124 90388	ELECT 3300μF 16V
C806	4822 124 90364	ELECT 220μF 16V
C807	4822 124 90364	ELECT 220μF 16V
C808	4822 124 22703	ELECT 0.22μF 50V
C809	4822 124 90354	ELECT 100μF 16V
C810	4822 124 22695	ELECT 2200μF 35V
C811	4822 122 40588	CERAMIC 0.022μF ± 20% 25V
C812	4822 122 40588	CERAMIC 0.022μF ± 20% 25V
C813	4822 124 41538	ELECT 220μF 35V
C814	4822 124 90354	ELECT 100μF 16V
C816	4822 124 41543	ELECT 1μF 50V
C817	4822 124 22274	ELECT 4.7μF 50V
C818	4822 122 40588	CERAMIC 0.022μF ± 20% 25V
C819	4822 122 30103	CERAMIC 0.022μF +80%-20% 50V
C820	4822 124 90364	ELECT 220μF 16V
C***		PJ03-CAPACITORS (COMMON) PLASTIC FILM CAPACITOR ONE WAY TYPE, MYLAR ± 5% 50V CJ13, CJ14, CL01, CL02, C613~C622, C627, C628, C633, C634, C805
GU05	4822 111 92166	PJ03-RESISTORS RESISTOR COMP.
GU07		
ΔRF10	4822 050 24701	470Ω ± 5% 1/4W [SD1020]
RJ23	4822 100 11351	10KΩ TRIMMING
RJ24	4822 100 11351	10KΩ TRIMMING
ΔRJ38	4822 115 90166	10Ω ± 2% 1/4W FUSIBLE
RK51	4822 116 82231	51KΩ ± 5% 1/6W
RK55	4822 116 82231	51KΩ ± 5% 1/6W
ΔRL02	4822 111 90967	4.7Ω ± 5% 1/4W FUSIBLE
ΔRL32	4822 115 90166	10Ω ± 2% 1/4W FUSIBLE
RL36	4822 100 11372	47KΩ TRIMMING
RL37	4822 100 11372	47KΩ TRIMMING
RM08	4822 100 11386	1KΩ TRIMMING
R613	4822 100 11351	10KΩ TRIMMING
R614	4822 100 11351	10KΩ TRIMMING
ΔR631	4822 115 90166	10Ω ± 2% 1/4W FUSIBLE
ΔR801	4822 113 90107	4.7Ω ± 5% 1/4W FUSIBLE
ΔR802	4822 116 60307	1Ω ± 5% 1/4W FUSIBLE
ΔR803	4822 115 90166	10Ω ± 2% 1/4W FUSIBLE
ΔR805	4822 050 24701	470Ω ± 5% 1/4W
ΔR806	4822 050 24701	470Ω ± 5% 1/4W
ΔR817	4822 115 90166	10Ω ± 2% 1/4W FUSIBLE

REF. DESIG.	PART NO.	DESCRIPTION
R***		PJ03-RESISTORS (COMMON) CARBON FILM FIXED RESISTOR ±5% 1/6W: RF01~RF08, RJ01, RJ02, RJ21, RJ22, RJ31, RJ32, RK09~RK12, RK15, RK39 RK52~RK54, RK56, RL01 RL33, RL34, RL35, RL38, RM31~RM33, RM41, RM4 RM45~RM52, RR03, RR0 RS24, RU51~RU62, RW0 RW12~RW22, RW25, R60 R615~R619, R621~R627, R632~R639, R804, R807~ R813, R815, R816, R819,
DF01	4822 130 80837	PJ03-SEMICONDUCTOR DIODE, HSS81TD [SD102
DF02	4822 130 80837	DIODE, HSS81TD [SD102
DF03	4822 130 80326	L.E.D., LT3D8B RED [SD1
DF04		
?	4822 130 33305	DIODE, 1SS176, MA165, 1A
DF07		[SD1020]
DM31	4822 130 32508	DIODE, RL103E/DSF10C
DM32	4822 130 80318	ZENER DIODE, 6.8V
DM51	4822 130 82609	ZENER DIODE, 2.0V [SD1
DR01		
?	4822 130 33305	DIODE, 1SS176, MA165, 1A
DR06		
DS01	4822 130 33305	DIODE, 1SS176, MA165, 1A
DS02	4822 130 33305	DIODE, 1SS176, MA165, 1A
DS20	4822 130 33305	DIODE, 1SS176, MA165, 1A
ΔD801		
?	4822 130 32508	DIODE, RL103E/DSF10C
ΔD810		
D811	4822 130 32508	DIODE, RL103E/DSF10C
ΔD813	4822 130 32508	DIODE, RL103E/DSF10C
D814	4822 130 80272	ZENER DIODE, 04AZ7.5-3
D815	4822 130 80322	ZENER DIODE, 04AZ16-X
ΔD816	4822 130 32508	DIODE, RL103E/DSF10C
ΔD817	4822 130 32508	DIODE, RL103E/DSF10C
D818	4822 130 32508	DIODE, RL103E/DSF10C
D820	4822 130 80091	ZENER DIODE, 12V
QF01	4822 209 63468	IC NJM082D
QF02	4822 130 61189	DIGITAL TRANSISTOR, C
		[SD1020]
QJ01	4822 209 62249	IC CXA1115E
QJ02	4822 130 60588	DIGITAL TRANSISTOR, C
		UN4211
QJ03	4822 209 61667	IC UPC1330F
QK01	4822 130 61723	DIGITAL TRANSISTOR, C
QK02	4822 130 61723	DIGITAL TRANSISTOR, C
QK15	4822 130 61189	DIGITAL TRANSISTOR, C
QL01	4822 130 61886	TRANSISTOR, 2SD1292 (
QL31	4822 130 61725	TRANSISTOR, 2SD2010
QL32	4822 130 61723	DIGITAL TRANSISTOR, C
QL33	4822 130 60588	DIGITAL TRANSISTOR, C
		UN4211
QL34	4822 130 60588	DIGITAL TRANSISTOR, C
		UN4211
QM31	4822 209 30307	IC 74HC4094
QM33	4822 130 60766	DIGITAL TRANSISTOR, C
		UN4111
QM34	4822 130 61886	TRANSISTOR, 2SD1292S
QM35	4822 130 61725	TRANSISTOR, 2SD2010

PART NO.	DESCRIPTION
4822 130 60588	DIGITAL TRANSISTOR, DTC114ES/ UN4211
4822 130 60588	DIGITAL TRANSISTOR, DTC114ES/ UN4211
4822 130 42298	TRANSISTOR, 2SC536SP, 2SC2458, 2SC3311, 2SC1740S
4822 130 42298	TRANSISTOR, 2SC536SP, 2SC2458, 2SC3311, 2SC1740S
4822 209 30193	IC LB1641
4822 130 61189	DIGITAL TRANSISTOR, DTC114TS
4822 209 30307	IC 74HC4094P
4822 209 30193	IC LB1641 [SD1020]
4822 130 60766	DIGITAL TRANSISTOR, DTA114ES/ UN4111
4822 130 61189	DIGITAL TRANSISTOR, DTC114TS
4822 130 60588	DIGITAL TRANSISTOR, DTC114ES/ UN4211
4822 130 60588	DIGITAL TRANSISTOR, DTC114ES/ UN4211
4822 130 60588	DIGITAL TRANSISTOR, DTC114ES/ UN4211
4822 209 73275	IC TC9214P
4822 209 73275	IC TC9214P
4822 130 61723	DIGITAL TRANSISTOR, DTC323TS
4822 130 61723	DIGITAL TRANSISTOR, DTC323TS
4822 130 60588	DIGITAL TRANSISTOR, DTC114ES/ UN4211
4822 130 60588	DIGITAL TRANSISTOR, DTC114ES/ UN4211
4822 130 61723	DIGITAL TRANSISTOR, DTC323TS
4822 130 61723	DIGITAL TRANSISTOR, DTC323TS
4822 209 32748	IC HA12155NH
4822 130 60588	DIGITAL TRANSISTOR, DTC114ES/ UN4211
4822 130 60588	DIGITAL TRANSISTOR, DTC114ES/ UN4211
4822 130 61723	DIGITAL TRANSISTOR, DTC323TS
4822 130 61723	DIGITAL TRANSISTOR, DTC323TS
4822 209 70385	IC L78MR05
4822 209 31629	IC NJM7815FA
4822 130 60766	DIGITAL TRANSISTOR, DTA114ES/ UN4111
4822 130 42715	TRANSISTOR, 2SA608SP, 2SA1048, 2SA1309, 2SA933S
4822 265 51366	PJ03-MISCELLANEOUS JACK, 28P
4822 267 41009	TERMINAL, 2P REMOTE
4822 157 63605	TERMINAL, 4P LINE IN/OUT
4822 277 21465	SLIDE SWITCH, VOLTAGE SELECTOR [1A/1B]
4822 157 53521	CHOKE COIL, 22MH
4822 157 53521	CHOKE COIL, 22MH
4822 148 81358	OSC TRANS 105KHZ
4822 152 20622	CHOKE COIL, 2.2MH
4822 157 52461	M.P.X.COIL
4822 157 52461	M.P.X.COIL
4822 146 21748	POWER TRANSF. 115V/230V [1A/1B]
4822 146 21747	POWER TRANSF. 230V/240V [2A/2B]
4822 277 21717	SLIDE SWITCH, EXT/SYSTEM

REF. DESIG.	PART NO.	DESCRIPTION
		PU03-μ-COM AND DISPLAY CIRCUIT BOARD
		PU03-CAPACITORS ELECT 10μF 16V BIG ELECT 0.047F 5.5V CERAMIC 0.022μF ± 20% 25V CERAMIC 22PF ± 5% 50V CERAMIC 0.022μF ± 20% 25V
		PU03-RESISTORS RESISTOR COMP. RESISTOR COMP. 100KΩ X13 RESISTOR COMP. 100KΩ X9
		PU03-RESISTORS (COMMON) CARBON FILM FIXED RESISTOR, ± 5% 1/6W: RU01~RU05, RU10~RU17, RY09~RY32, RY52~RY54
		PU03-SEMICONDUCTORS DIODE, 1SS176,MA165,1SS254 DIODE, 1SS176,MA165,1SS254
		PU03-MISCELLANEOUS MICROPROCESSOR, MB88626BP-G- 146-SH
		JACK, 28P
		SLIDE SWITCH, REVERSE-MODE SLIDE SWITCH, TIMER REC/PLAY SLIDE SWITCH, DOLBY OFF/B/C
		PUSH SWITCH PUSH SWITCH PUSH SWITCH PUSH SWITCH
		PUSH SWITCH
		PUSH SWITCH
		DISPLAY UNIT, FIP9DAM7
		JUMPER LEAD, 28P
		CERAMIC VIBRATOR, CST8.00MGW
		PX03-KEY SWITCH CIRCUIT BOARD
		PX03-CAPACITOR CERAMIC 0.022μF ± 20% 25V
		PX03-RESISTOR RESISTOR COMP.
		PX03-RESISTORS (COMMON) CARBON FILM FIXED RESISTORS, ± 5% 1/6W: RY01~RY07, RY51
		PX03-MISCELLANEOUS PUSH SWITCH PUSH SWITCH

NOTE ON SAFETY

Symbol Δ Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol Δ . Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.